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COAL AGE

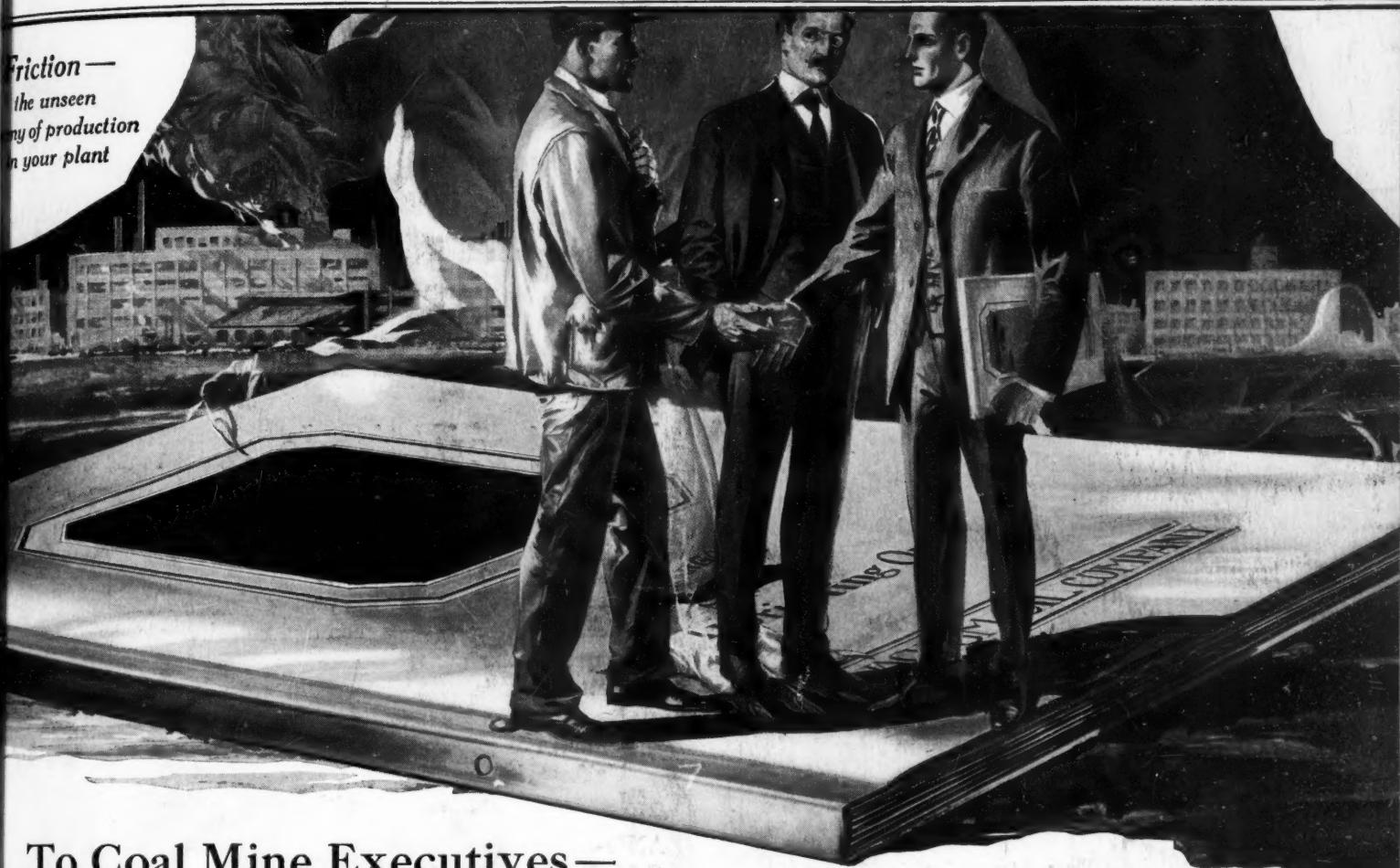
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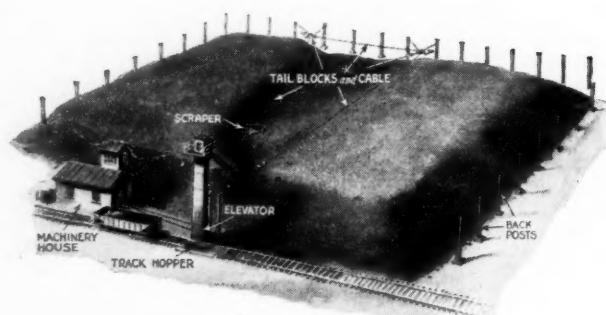
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COALAGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, *Editor*

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Number 4

An Endurance Test in the Ruhr

EVERY eye is now on the Ruhr. Can the horse be made to drink, now that he has been led to water? The French have the coal fields under their control, but can they mine and transport the coal? It was generally agreed in this country last summer that soldiers do not make good coal miners.

In Europe Coal—coking coal—is King. Coal has become the real basis of the German currency, the shortage of fuel in that country has become a chief source of trouble and the centralization of its control the chief source of wealth of great industrialists, like Stinnes. Germany, from having an exportable surplus of coal as before the war of some 25,000,000 tons, now stands in need of net imports of nearly a like amount. The loss of the Saar and the partition of Upper Silesia, whereby about three-quarters of the coal and half the coke went to Poland, left Germany little but the Ruhr and the brown-coal mines.

Of a total of around 100,000,000 tons of Ruhr annual output France wants and needs some 15,000,000 tons and Germany the remainder. The steel industries of both countries depend on this supply. The present contest will test the resistance of both France and Germany to a coal shortage that by the very nature of the case will be much the more serious to the east of the Rhine.

"Not Guilty"

TWO words from a jury in "bloody" Williamson County, Illinois, have brought happiness to various officers of the United Mine Workers of America and unutterable relief to scores of union miners in southern Illinois. That is the best that can be said of the verdict returned Jan. 19 in Judge Hartwell's court at Marion, Ill., where were tried the first five of 77 men indicted for slaughtering 21 non-union strip miners and guards June 22 at Herrin. Surely that same happiness cannot be felt by all officers of the United Mine Workers of America, for there are a host of sane and law-abiding men among them. Surely that same unspeakable relief is not felt by all union miners in southern Illinois, for there must be good American citizens in that solidly unionized region. Thousands of them had no part whatever in wantonly butchering the surrendered strip miners. Among those thousands surely there are men who rue Jan. 19 as a day when mob violence definitely enthroned itself as ruler of Williamson County.

A good case was built up by state and federal investigators and attorneys in the face of every obstacle that public sentiment and organized action in Williamson County could lay. A fair presentation of that case before the jury was made. The defence devoted most of its efforts merely to impeachment of the state's evidence so that by the time the case was given to the

jury it was a matter of one man's word against another's—the word of a free-talking, nothing-to-fear witness on the popular side of the miners' union against the word of an eye-witness who talked in fear of his life yet testified damningly and swore it was the truth. The jury took the word of the free talker, and the United Mine Workers won the case.

It would have been unhealthy at least for the "twelve good men and true" to bring in any other kind of a verdict. Now that the verdict is in, thus setting the pace for the massacre trials to ensue, what of the victory of the United Mine Workers of America? Their attorneys exultantly greeted the end of the case with a statement that the verdict made them "happy because this may, and ought to be, the birth of a new era in industrial disputes in America"! If it is, then by this bloody perversion, murder and physical torture are set up by the United Mine Workers of America as legitimate weapons in industrial disputes. What an era these spokesmen for the union desire!

The Coal Commission's Report

IN ITS effort to be absolutely fair and to avoid placing responsibility before the blame is proven, the President's Coal Commission has brought out a report which is certain to be a disappointment to the consumers of coal and to many members of Congress. In the coal trade itself there is an evident sense of relief. In the average investigation of this kind it is customary to have some harsh things to say to operators, wholesalers and retailers, even before it has been established that they are guilty.

The Jan. 15 report has all the indications of a desire to avoid expressing conclusions until all the facts can be weighed. As a consequence, it may be predicted that the smaller consumers and a certain element in Congress will feel that the report is colorless and that the commission is not reaching the seat of the trouble. It does not express an opinion as to whether or not current prices are just. It does not say whether or not the miners are receiving a higher rate of wage than the consumers should be called upon to pay. No one is accused of profiteering. The report indicates in a general way something as to the spread between the cost at the mine and the delivery cost of coal, but it gives no clue as to who is responsible. Labor, transportation, overdevelopment, storage and other matters are discussed, but little is said about the business factors in coal. For that reason it is certain that some of the gentlemen on Capitol Hill will conclude that the commission has written "Hamlet" with Hamlet left out.

The more constructive thinkers both within and without the industry seem to be agreed that the commission did well in making haste slowly. Even those who are expressing much disappointment with the report are

inclined to suspend final judgment as to the possibility of the commission bringing out something concrete at a later date.

A careful analysis of the report shows that there is little material in it which could not have been written on the first day that the commission sat. Nevertheless the presentation of this material is regarded as being valuable because the wide publicity will contribute greatly to the popular understanding of the entire subject. The report must be regarded more as a statement of the problems of the commission than as a contribution to their solution. Not one shred of new statistical information is contained in the document. From a constructive point of view this failure is regarded by some as the most serious because the report as it stands holds out no assistance to the New York conference. A significant feature of the report is the indication that the commission is not inclined to allow the industry to blame all of its ills on transportation.

"Changing a Dollar Into Four Quarters"

THE epidemic of stock dividends which broke out so virulently during the closing months of the old year continues to excite much public discussion. Opinions continue to differ widely as to their purpose and effect. In view of the leading part played by the Standard Oil group in the distribution of such dividends particular interest attaches to the vigorous defense of the policy advanced by A. C. Bedford in his address before the American Petroleum Institute, now available in the form of an attractive brochure.

Mr. Bedford flatly denies that stock dividends result in any tax evasion. Further, he makes a strong plea for the essential soundness of the process of building up a surplus from current earnings, putting it back in the business and capitalizing it through the issuance of new shares to old stockholders. The issuance of the stock dividend, he insists, means merely "changing a dollar into four quarters." It creates no new wealth.

Economists and accountants generally will agree with Mr. Bedford in his contention that the simple act of declaring a stock dividend creates no new wealth. They also will agree that the increase of the capital fund is essential to the progress of business and the country generally. Finally, they will admit that the stock dividend does not offer a method of tax evasion in any legal sense.

However, having conceded all of these points, an honest, inquiring mind may still hunger for a deeper analysis than Mr. Bedford has made. Is there nothing more than this to the stock-dividend epidemic? Is there no rational explanation for the conviction so generally prevalent that the stock dividend is significant of some condition which needs correction?

Mr. Bedford apparently accepts the orthodox definitions of wealth and income, for he argues that the stock dividend is not income because it creates no "new wealth." One has income when his wealth—his economic strength, in the sense of command over goods and services—has increased. This is the general conception of income which underlies our federal income-tax law. With this definition in mind, let us raise a few queries which may serve to clarify the issues.

Suppose I invest 25c. in the Standard Oil Co. of New Jersey. Suppose the company prospers and builds up a large surplus, my share of which amounts to the value of 75c., so that my interest in the company is now

worth a dollar. Suppose the company declares a stock dividend "changing the dollar into four quarters." Has anything of significance happened? Has my economic strength increased? Have I really received any income?

Clearly the stock dividend simply recognizes an existing situation. It recognizes that the quarter has expanded into a dollar and makes the convenient "change." But the significant thing is that I am ahead to the extent of 75c. in value—not merely because of the stock dividend but as the result of the whole process. At the beginning I had a quarter invested in productive enterprise. Now I have an investment worth, by assumption, a dollar.

The real nub of the matter from the tax point of view is this: the process described in the above example is about the only way I can make 75c. and reinvest it in productive enterprise without subjecting the three new quarters to the heavy surtaxes of the federal income tax. The corporation pays the normal tax—slightly higher, it is true, than the individual normal rate—when it adds the new quarters to surplus, but I am asked to account for them only if and when the corporation distributes them to use as a cash dividend or if and when I sell my stock at the enhanced value due to the surplus which has been built up. This "if and when" is of considerable importance.

If I had invested my original quarter in an equally prosperous individual enterprise or partnership I should have been asked not only to pay the normal tax as the new quarters were earned and reinvested but in addition I should have been compelled to pay the surtaxes on them when earned rather than "if and when" distributed or "if and when" I sold the stock at an advance.

Clearly the corporate form of business organization has an advantage under the tax law because of this situation and the stock dividends are advertising this advantage in a most striking manner. It is this advantage which is really the shining mark at which the "agitators" are aiming. Is it not an advantage which must in some manner be equalized if the "sturdy qualities" of individual initiative and resourcefulness, which Mr. Bedford so properly praises, are to be given full play?

How to accomplish this is, indeed, perhaps the most puzzling tax problem which the federal government is facing. It cannot be solved by refusing to recognize its existence or by approaching it from the point of view of one industry, one form of business organization, or one economic class. The differential in favor of the corporation may conceivably be removed by increasing the burden on the corporations or by decreasing the burden on the other forms of business enterprise.

The "agitators" suggest a new tax on the undistributed surplus of corporations as closely equivalent as possible to the present surtax burden on reinvested earnings of other forms of business enterprise, a suggestion which Mr. Bedford labels "a proposal of sabotage by legislation." The fear of such a tax probably is a contributing cause although not the sole or perhaps not the most important cause of the stock-dividend epidemic. The alternative plan for eliminating the corporations differential would be to reduce the present burden upon reinvested profits of partnerships and individuals. But he who proposes this must be prepared to convince the public that a dollar of wages should be more heavily taxed than the dollar of reinvested profit. This is the dilemma!



Surface and Underground Methods at Blue Diamond Mine; Modification of Elkhorn System of Mining Used

Lengthy Hillside-Scraper Conveyors—Hoist Hauls Supplies Up Two Hills and Places and Retracks Cars at Tipple—Wide and Narrow Rooms Alternate—Pillaring System Can Be Adapted to Roof Encountered

BY ALPHONSE F. BROSKY*
Pittsburgh, Pa.

FOUR miles northwest of Hazard, Ky., as the bird flies, and twice that distance by rail, on First Creek, off the North Fork, lies the town of Blue Diamond and the mine of the same name, which are the property of the Blue Diamond Coal Co.

In the Hazard field, of only one tipple can it be said that it is constructed entirely of steel, and that one is at the Blue Diamond Mine. The reason why steel tipples are not to be found doubtless is because of the difficulties of transportation. A steel tipple complete seldom costs more than 20 per cent more than a wooden tipple of similar proportion and design. The fire hazard, which is unusually severe in places such as Hazard, where little water is to be had in the dry seasons and where forest fires are common, would warrant the additional investment that the steel tipple entails. Few of the tipples in eastern Kentucky, even though of wood and of recent construction, have adequate fire protection. One properly provided with a fire line will be described in a later issue.

The Blue Diamond tipple is designed to size 300 tons of coal per hour into slack, nut, egg and lump, or any

combination of the first three or run of mine. The mine can load about 3,000 tons daily and this is the capacity of the tipple. The Hazard No. 6 seam varies in thickness from 6 to 7 ft. It has two partings, neither of which, however, persists throughout the field; first one and then the other runs out. The Blue Diamond acreage is comparatively free of either parting. A representative analysis of the coal shows 1.96 per cent moisture, 37.16 per cent volatile matter, 56.32 per cent fixed carbon, 4.60 per cent ash and 0.56 per cent sulphur. Its heat value is 13,800 B.t.u.

The coal lies about 200 ft. above the railroad in two main hills which flank the spur track and in the hills adjoining, the holding measuring 4,000 acres. Coal is dropped to the tipple from the two sides by means of scraper-conveyors, one of which is 410 ft. long. For part of its length it is on a 26-deg. slope. The other is 210 ft. long, the slope being 23 deg. The company officials favor the scraper-conveyor, believing that the rope-and-button conveyor, though a satisfactory lowering medium, does not have the needed capacity. They prefer the conveyor to monitors, gravity planes and chutes.

At No. 2 headhouse the mine cars in twos are dumped, still coupled to the trip. For this purpose, a two-car rotary dump is used, the coal dropping into a 50-ton bin. A reciprocating feeder feeds it to the scraper-conveyor which carries it to the tipple. At Headhouse No. 1 the same arrangement has been made

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NOTE.—The headpiece shows the tipple at Blue Diamond Mine, Blue Diamond, Ky. On the left may be seen the shed of the scraper-conveyor by which the coal is lowered down the hill on that side. Coal is brought to the horizontal shed on the right by a scraper-conveyor housed and supported in a similar manner. Scaffolding has been erected for the purpose of adding another lump picking table. The small shed that appears to be directly under the scaffold, but is really behind it, houses the hoist by which supplies are pulled up the hill and railroad cars are placed and retracked.

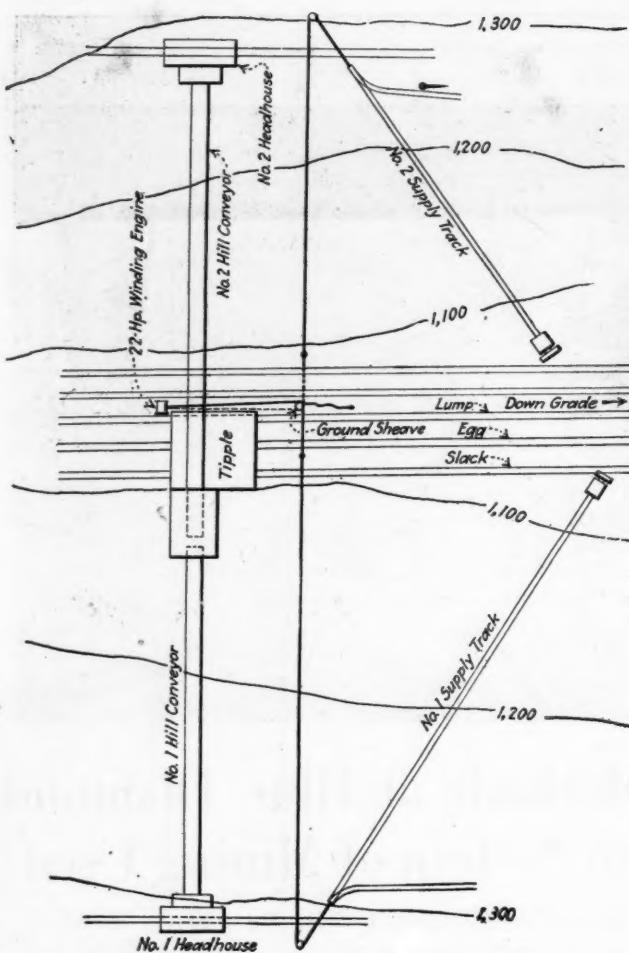


FIG. 1—HOW ONE HOIST PERFORMS THREE DUTIES

Schematic plan showing the electric hoist near the tipple of the Blue Diamond Mine and the connections which make it possible to use it for hauling railroad empties, loads and supply cars on the railroad tracks and to hoist mine cars filled with supplies on the two inclines which scale the steep hillsides.

except that only one car is dumped at a time. The arrangement of the tipple has no unusual features.

The coal from the two conveyors falls into a common bin and becomes merged. Thence it is fed to the shaker screens. The slack removed in the second cleaning which is made over the egg screens is carried to a slack bin by an unusual method of conveyance, namely, a worm conveyor. The original tipple had but one lump picking table. An additional lump table has been installed in an annex to the tipple, so that part of the lump coal will go over the old and part over the new table. After passing over the new table for picking purposes only, it will pass back to the end of the old table at the head of the loading boom over the lump track.

An extremely interesting and practical hoisting arrangement is used on the tracks of the Blue Diamond plant. A 22-hp. electric winding engine with a single cylindrical drum $2 \times 2\frac{1}{2}$ ft. is placed at the upper end of the tipple between No. 3 and No. 4 tracks. A close inspection of the headpiece will show the shed in which this engine is housed and its position relative to the tipple and tracks. About the drum is wound approximately 1,500 ft. of $\frac{1}{4}$ -in. steel-stranded cable at the end of which is a clevis block.

This rope is used for various purposes about the tipple tracks such as bringing up supplies in freight cars from the siding, hauling back coal cars that might by chance get away from the tipple, pulling back on

the track derailed railroad cars and performing like services. In a way it performs many of those duties about the tipple that usually are performed by that class of steam locomotive known as a "shifter."

Located directly in front of the winding engine and below the tipple is secured a horizontal ground sheave about which the hoist cable may be made to pass. This is used to turn the rope either to the right or left.

A supply track on each hill raises all materials to the level of the coal. Ropes similar to the main rope pass up the respective hills over sheaves and pulley blocks and down the supply tracks. The end of the main rope may be attached by a clevis coupling to either of the free ends of the two supply-track ropes. This gives the hoist duty in three different directions, straight ahead for railroad work or to the right or left when used on one or the other of the two supply tracks on the hills. Fig. 1 is a schematic sketch of the plan.

CLEAVAGE PLANES IN COAL NOT PRONOUNCED

The cleavage of the coal is not pronounced, so it matters little whether the rooms are driven "face on," "end on" or in any of the intermediate directions. As the shape of the coal area is not regular the rooms cannot be driven in the same direction everywhere throughout the mine. The main entries under the several hills are driven in a manner to obtain the most economical haulage and mining, sometimes askew to each other, depending upon the lateral axis of the several hills. Rooms are driven parallel to these. The varying direction of the room owing to the mining of irregular bodies of coal makes it difficult for those superintending the work to obtain large recoveries. Conditions in this field differ from those in the deeper seams of other states, for there mining may be performed more systematically.

As has been said already, the rooms usually are driven parallel with the main entries, developing a true room-and-pillar system, with only one pair of main entries and with stub butt headings on either side. Those who followed the description of the mining methods of the Columbus Mining Co. in the Hazard No. 4 seam which appeared in the issue of *Coal Age* of Nov. 11 will remember that in that mine the panel system has been adopted. Both companies use the modified Elkhorn system of mining. In the Blue Diamond Mine the four mains are driven on 62-ft. centers, 12 ft. wide,

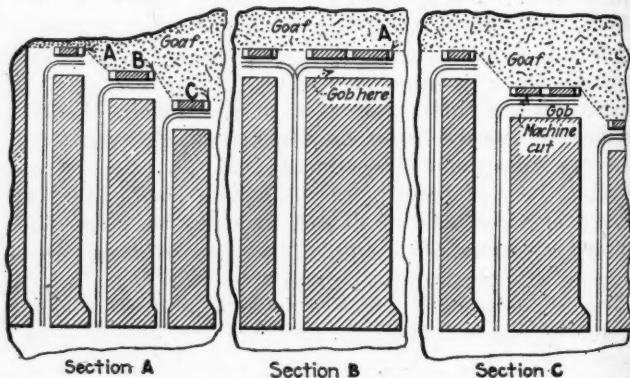


FIG. 2—THREE PILLAR METHODS WITH ELKHORN PLAN

If the wide pillar cannot be mined from the wide rooms on either side of it, because the large open areas would make such work dangerous, then the pillar may be split in two by a narrower room and each pillar worked independently as illustrated in the left panel. Sometimes it is found advisable to bring both the wide and the narrow pillar back from the same room as in the center panel. On the right is shown still another way to mine these pillars. Most of the pillar coal is cut by machine.

giving a 50-ft. chain pillar. Further protection is afforded by 100-ft. barrier pillars. The butt entries are driven every 404 ft. on 52-ft. centers, thus providing a chain pillar 40 ft. in width.

The rooms are driven 200 ft. long and in both directions. It will be recalled that the Columbus Mining Co. has gone even further and makes its rooms only 175 ft. long. By employing the 200-ft. room this company indicates that it is its belief also that the short room is preferable. In the past the Blue Diamond Coal Co. made its rooms 250 ft. long, but it has found that the present 200-ft. room has its advantages. Briefly, its merits are: That room track is tied up for a shorter period of time; that a room with bad roof is speedily driven up and the pillars withdrawn; that the pillar is completed more quickly and that gathering locomotives and undercutting machines can be operated with less cable.

The rooms are 20 ft. wide, the neck being only 12 ft. long. The rooms are driven alternately on 45-ft. and 85-ft. centers, leaving alternately a 25-ft. and a 65-ft. pillar. This sequence is maintained from the

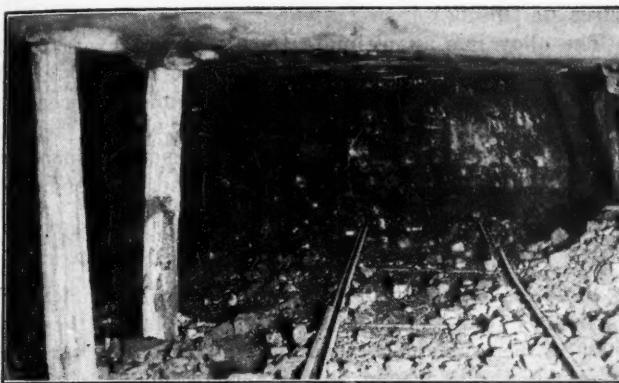


FIG. 3—ROOM BEING DRIVEN INTO SOLID COAL

Rooms are driven 20 ft. wide and necked when 12 ft. from the heading. Timbers are carried on a line that affords just enough clearance for safety. The room as shown has not been cleaned ready for the next cut.

main entries to the crop. The rooms are driven to meet each other, and the pillars are brought back immediately, providing drainage is not hampered thereby.

The wide pillar lying between two sets of two rooms on 85-ft. centers comes in handy where bad roof conditions prevail, for it assures adequate support of the cover. It also gives a broad choice as to the manner in which the pillar may be drawn, depending upon the roof conditions at that particular point.

Fig. 2 indicates three distinct methods of mining out a wide pillar and a narrow pillar adjacent to it. Thus if the roof will not permit of taking the pillar off the end "long face," as it is termed, then the pillar may be split from end to end by a 12-ft. room driven through the center of it. The two smaller pillars are then worked independently of each other, as indicated in section A, Fig. 2.

In other places only a portion of the pillar will be split, say from the last crosscut forward, in the hope that when the retreat reaches the unsplit pillar that pillar may be worked across its entire width. Although it is not customary in this system to bring back two pillars from one room, this is being done in a few places in the mine, and with satisfactory results. Where the roof refuses to break close up to the pillar and extends like a cantilever into the goaf, the weight is likely to be concentrated on one corner of the pillar



FIG. 4—ROAD DRIVEN THROUGH COAL PILLAR

A 12-ft. roadway is driven through the end of the pillar, leaving a pillar 6 ft. wide which can be penetrated by a mining machine. Two cuts are made in the pillar, leaving three small stumps 6 ft. square—one at each end and one in the middle. These are drawn by the use of the hand pick.

as at A in section B of Fig. 2, and this corner is likely to give way under the strain.

But if the roof breaks readily then the wide and narrow pillar may be brought back together, the wide step in the pillar front in that case not being undesirable; otherwise it might be advisable to bring the pillars back out of line so that the steps on the pillar front will be many and easy, as in section A. With this arrangement three bearing corners would support the weight of the hanging roof as at A, B and C in section A. Bringing the pillars back as in section C is yet another way. It must be understood that only in places would the roof fail to break off close to the coal in the manner just mentioned. Roof thus obstinate is not commonly found; if it were it would indicate that the rooms were not being properly laid out, and a dangerous squeeze would follow.

MINING USUALLY GOVERNED BY BAD SPOTS

However, even in the best regulated systems, careful as we may be, there are spots in any mine where the roof does not break down as well as at other places. It is these few spots, though they are in the minority, that govern the mining throughout the mine. Right here is where the wide pillar offers an alternative: It may be mined unsplit, thus producing a larger tonnage per working place, or else it may be split in two, giving two pillars of the usual width. If conditions favor working a wide pillar, then work it as such; if not, then split it. Certainly the wide pillar reduces track costs in the pillar section and, incidentally, the daily mileage of a gathering motor in any given area.

When a wide pillar is butted off, a place 12 ft. wide is cut through the rib, leaving a wing 6 ft. wide to be taken out in coming back. The cutter bar of the machine can cut through this. The track usually is laid close to the wing to facilitate cutting and loading and to provide a space for the gob between the track and the solid pillar of coal behind it. The wing is loaded out in two cuts, leaving two end stumps and a center sprag, which later are extracted by hand picks.

The mine village is second to none in the Hazard field. Its plan is peculiar in that the dwellings are scattered and stretch over a considerable distance. The little bottom land available is occupied by a few houses, but the preference seems to be to locate the dwellings, as far as may be, on the hillsides. The main part of the town is its upper end. Below, and extending for nearly one-half mile down First Creek, the lines of houses branch out as tentacles on both sides up the



FIG. 5—WHERE PILLARS ARE DRAWN AS IN SECTION B

On the right the pillar is 65 ft. wide and on the left only 25 ft., both pillars being drawn simultaneously. The fallen goat can be seen at the end of the road. A goodly portion of the coal in the pillars can be saved with this method of operation.

several hollows that enter the main valley in that distance. Sometimes they are placed in a single row not far from the bottom but often they are arranged in double rows, the last at a considerable distance up the hillside. The extended house line is quite long. It must be at least three miles in length.

The inhabitants of the town are provided with good drinking water. The company removes garbage and rubbish twice each week and every means possible is utilized to maintain the community in good health. The usual care has been taken to provide the people with recreative amusements.

The town has a beauty spot which abounds in such evergreen shrubs and trees as holly, pines and rhododendrons. Many of these have been set out by the company. Walks with concrete steps and a rustic bridge give the inclosure the appearance of a country estate. Within its bounds are some thirty dwellings for single families. I mention these things to set aright those readers who are of the opinion that the owners of isolated camps in far-away places never show any appreciation of beauty or of the possibilities of landscape gardening.

The Blue Diamond officials instead of planning a bad imitation of a small city—a treeless waste with all manner of disarray—have sought to maintain the beauties of the Kentucky mountain region.



FIG. 6—VILLAGE SCENE IN BLUE DIAMOND

The mining company has hesitated to improve overmuch on nature. The average mining town is started by destroying everything that could render the town beautiful. The Blue Diamond Coal Co. has spared the trees but cleaned up the underbrush and logs and removed the rotten timber, so as to eliminate the fire and accident hazard, giving the town a beauty that uniformity could not afford. The houses are well spaced so as to leave the landscape but little spoiled by human intrusion.

Chromium-Iron Alloy Resists Oxidation, Corrosion, Abrasion and Heat

ONE of the main troubles in mining work is the rapid corrosion of all metals exposed to the acid action of mine water. It has been found that alloys can be made that resist oxidation, corrosion and abrasion with eminently satisfactory results, but in most cases these alloys are extremely expensive and do not adapt themselves with any degree of flexibility to the varying needs of the industry. Some can be cast but not rolled. Many cannot be drilled, bent or punched.

Certain chromium-iron alloys, known as Duraloy, are manufactured by the Cutler Steel Co., of Pittsburgh. They may be obtained either cast or rolled. The proportions of the constituent metals are varied so as to resist oxidation alone, or corrosion and oxidation combined or abrasion, corrosion and oxidation—all three. Bars or sheets of the metal can be made sufficiently ductile to permit of bending, punching, forming and stamping. They are afterward treated to increase their hardness and wearing qualities. Such metal can be made into wires or tubing.

The alloy has an ultimate tensile strength of 40,000 to 90,000 lb. per square inch, an elastic limit of 30,000 to 80,000 lb. and an elongation of from 2 per cent to nothing. The rolled or forged alloy has a tensile strength of 80,000 to 130,000 lb. per square inch, an elastic limit of 65,000 to 110,000 lb. and an elongation from 26 to 8 per cent.

CAN BE TAPPED, THREADED AND DRILLED

Some of the rolled or forged alloys can be machined as easily as medium-carbon steel, and some of the castings can be tapped, threaded and drilled, but if hardness is sought the alloy can be furnished at 600 Brinell, in which condition, it is, of course, possible to finish it only by grinding.

The strength is well maintained under heat. At a temperature of 932 deg. F. it is still 98,000 lb. per square inch, and at 1,832 deg. F., no less than 10,000 lb. The alloy may be welded by either oxyacetylene or electric-arc methods, using a welding rod of the alloy where two pieces of the metal are to be joined or a standard welding rod where the alloy has to be welded to some other metal. Preheating is desirable but not essential. The metal is readily cut by the oxyacetylene cutting torch, for it does not oxidize.

Its weight loss to corrosion after two hours was zero, that of nickel was 0.01 per cent; that of an alloy of nickel and copper, 3.81 per cent; that of cast steel, 5.39 per cent; that of cast iron, 5.57 per cent, and that of steel 6.80 per cent. In the same corrosive liquid the weight loss of Duraloy in 300 hours was 0.01 per cent.

J. W. PAUL, COAL-MINING ENGINEER, of the U. S. Bureau of Mines, has made a study of the barricades constructed by entombed miners in the recent Argonaut mine disaster in California. A miners' circular on the use of barricades following explosions and fires in mines will be issued at a later date by the bureau.

ADDITIONAL LOCAL CHAPTERS of the Joseph A. Holmes Safety Association have been formed at Brewster, Fla.; Bay City, Mich.; Cuyerville, N. Y., and at Newcastle, Wash. On Nov. 1 there were 27 chapters located in 12 states, representing the coal, gold, lead, copper and phosphate mining and petroleum refining industries.

Grudekoks

By O. P. HOOD*

Washington, D. C.

WHEN a new material is put on the market a name must be found which is either descriptive of the material or warranted to attract attention. A new member of the family of fuels in Germany carries the name of "grudekoks," which means "embers coke." In our own country we have been hunting for a suitable name for the material that remains after lignite is subjected to a heating process by which most of the moisture and volatile matter is driven off. The term "lignite coke" suggests itself, but this is a little misleading, as the material does not look like the familiar coke as made from bituminous coal. The term "lignite char" is perhaps a little more descriptive, and this may be taken as the American equivalent of the German grudekoks.

In attempting to improve lignite as a fuel it is desirable that the large quantity of water—from 25 per cent to 40 per cent—be driven off in order to concentrate the fuel values sufficiently to warrant distant transportation and to make a stable product. With the water removed the ash remains and about equal parts of volatile matter and fixed carbon. The volatile matter may be more valuable as a source of byproducts than as a raw fuel, and, furthermore, when it is partly removed the resulting char is mechanically stronger than the lignite from which it is made. The following analysis of lignite char is perhaps typical:

Constituents	Per Cent
Moisture	2
Volatile matter	12
Fixed carbon	72
Ash	14

A semi-anthracite from Pennsylvania analyzes as follows:

Constituents	Per Cent
Moisture	3.4
Volatile matter	8.5
Fixed carbon	76.6
Ash	11.5

A sample of buckwheat No. 2 anthracite analyzed:

Constituents	Per Cent
Moisture	6.2
Volatile matter	5.6
Fixed carbon	71.5
Ash	17.5

The similarity between these products is striking, and it can be said that lignite char can be made that has an analysis quite comparable with anthracite. Physically, however, it is quite different. In expelling the moisture from lignite the material breaks up into small pieces of a size about like corn, wheat and broken rice kernels, with some of it even finer. A screen test of this material made from North Dakota lignite last summer is as follows:

Sizes	Per Cent
Over 1-in. round-hole screen	6
Over 1-in. through 1-in. screen	19
Over 1-in. through 1-in. screen	35
Through 1-in. screen	40

The material is gray black, and if "hard burned" has a slightly metallic ring or rustle as one pours the grains from hand to hand. The characteristic piece has rectangular faces like a miniature brick; the cleavage is therefore unlike anthracite, which is conchoidal. The

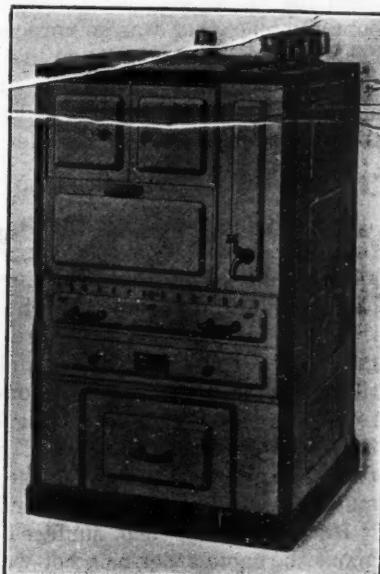
material is clean to handle and its heating value does not decrease on exposure. It is stable—that is, it does not change in the weather or break up further in the fire. The material is, however, smaller in size than any fuel we use except the fine sizes of anthracite. Having more volatile matter it kindles better than anthracite, and holds the fire well. It is also smokeless.

To use this material there are two possible procedures, one of which is to grind all the material fine and add a suitable binder, making briquets simulating anthracite of domestic size, and the other procedure would be to dodge the relatively expensive briquetting process and use the material direct. Past work has shown that very acceptable briquets can be made from this material, but industry in this country hesitates at the considerable expense and uncertainty of entering the briquetting field. The briquet in this country is still considered as a rather strange intruder in our family of fuels, even in our Eastern states, where briquets are becoming more common. A pile of briquets dropped on the sidewalk is still apt to attract the curious attention of the passerby. In Europe the briquet in several forms has long since been accepted as a standard fuel and not as a curious substitute.

Besides if we are slow to adopt the briquetting process perhaps we may learn to use at least a portion of this lignite char in its natural state. The material is too fine to be held on the usual furnace or cooking-stove grate or in a base burner. It has another peculiarity also which makes it different from fine sizes of anthracite: A glowing bed of lignite char reduces CO₂ to CO in an effective manner. In other words, it makes a most excellent producer gas, and this reaction, which is a cooling one, is so rapid that if the fuel bed is more than an inch or so in thickness the upper part of the bed is cooled and the fire appears to be dead.

For domestic heating lignite char lacks the cheerful glow of anthracite, unless the fuel bed can be kept uniformly thin. By introducing on the grate of an ordinary magazine base burner suitable for anthracite, a concentric cone so arranged as to extend into the magazine opening, and placed so that the fuel is compelled to flow over its surface in a thin sheet, the air entering through perforations in the cone will support rapid combustion, will give a glowing surface to a thin fuel bed and support a luminous and smokeless flame in the combustion space. This makes a fire quite as acceptable and grateful as anthracite.

In this way the small lignite char



KITCHEN STOVE FOR CONSUMPTION OF "GRUDEKOKS"

On the top on the left is the warming oven; below it lies the cooking section. To the right of these compartments is the hot-water tank with its spigot. Below them all is the drawer-like grate for the burning of the "grudekoks" and another drawer which acts as ash bin for the fire above. Under the ash box is another box in which the fuel is stored. The stove is composed of tile and acts as a heat reservoir.

*Chief Mechanical Engineers, U. S. Bureau of Mines.

can be used direct, but no equally satisfactory solution of the problem for either the cooking stove or the heating furnace as yet has been found.

There was some doubt, therefore, as to whether the unbriquetted material was sufficiently practicable to warrant being actively advocated, and hence it was with much interest that I found that the material was already in rather extensive use in Germany under the name of "grudekoks." Although made from brown coal the residue is substantially the same as the residue we get from American lignite. It is broken up in the same small sizes and analyzes high in fixed carbon and low in volatile matter. It is, perhaps, a little softer than our material, but it presents the same questions as to how it shall be burned as does our lignite char.

In central Germany some brown-coal deposits contain material yielding a high percentage of tar when subjected to low-temperature distillation. This material appears in the brown-coal bed as lighter colored layers, which are mined separately from the darker material. This lighter colored brown coal is subjected to low-temperature distillation in a circular kiln of simple construction, the resulting char being considered as a by-product, as the main objective in this process is the paraffin contained in the tar.

No attempt has been made in Germany to briquet this material, as an acceptable way has been found of burning the fine char direct without further processing and as the Germans do not have an anthracite habit to take into account. It is interesting to note also that this method of burning is entirely different from our own attempts at burning the char, which probably is due to national habits of heating. The American has always been used to an abundant fire, and, like the Englishman, he enjoys the feeling of radiant heat.

There is something in the glowing base-burner fire or the fire from an open grate that is much more cheerful, comfortable and homelike than can ever be obtained from the milder heat of a radiator. Even the old cannonball stove, that was so voracious of bituminous coal, never seemed to be quite at its best until its swelling sides were glowing red hot and radiating cheer to a circle of outstretched hands and feet. Most of our heating methods are built on the idea of a lively fire.

BURNED IN TILED STRUCTURE WITH MANY FLUES

The fireless cooker, with its relatively low-temperature cycle, seems to be the only popular exception to this general rule. In Continental Europe, however, the habit has been quite different. The household stove developed into a ponderous tiled structure with a relatively small grate, a labyrinth of flues, and a highly ornamented tiled surface, against which one must lay one's back to get any considerable feeling of heat. The mass of the tile and brick absorbs and gives off heat, and performs the same function of heat storage as does the mass of water in our hot-water heating systems.

In fact, these tiled surfaces have temperatures of about the same order as a hot-water heating plant would give to radiator surfaces. The German is quite thrifty in his use of fuel in these stoves, regulating the air supply almost with a micrometer adjustment, and by devices much better designed than those usually found on our own stoves.

These people also are used to cooking with charcoal, which gives a relatively mild heat. There appeared to be no considerable demand, therefore, for a glowing, radiant fire to meet a national habit of either heating

or cooking. The result was something quite different from anything we have here. It might be said that grudekoks is burned in a bureau drawer, for the stove structure is a cabinet with a series of drawers and door-covered compartments that would challenge the curious to guess whether he was looking at a bureau or an ice chest.

The device is based on a simple fact that has been observed by everyone who has used lignite. In burning lignite, although much fuel may drop through the grate, the carbon content of the ash always is extremely low. There is practically no loss due to carbon in the ash in burning either lignite or lignite char. Such material as does drop through the grate will continue to burn in the ash much as charcoal covered in a bed of ash will hold a fire for a long period, and finally be entirely consumed. Lignite char acts much as charcoal in this respect, and will burn also with air supplied entirely from above.

THIN COVERING OF CHAR OVER BED OF ASH

If, therefore, a bed of ash be provided of sufficient depth, the char will burn on it and continue to hold a fire for a long time. If lignite char be scattered over this bed of hot ash to a depth of, say, half an inch, and slightly raked into the bed, so as to make contact with the hot char, the material will be gradually ignited and will burn slowly, as does charcoal in a brazier. The German grudekoks oven provides, therefore, a drawer arranged to hold a bed of ash, and to have at a short distance above it a cast-iron stove top with lids, in the usual manner.

From the back of the drawer space a small pipe $2\frac{1}{2}$ or 3 in. in diameter connects with the house chimney. Air is admitted over the fuel bed through a damper in the face of the drawer. It is needless to say that the quantity of heat generated is small, and an American would call the fire slow, but that it fits with the German habit, and is effective, is shown by the fact that last year over 400,000 tons of grudekoks was used in this manner for domestic cooking and heating. The accompanying illustration depicting this oven shows below the fire drawer another similar drawer adapted to receive the excess ash as it is shaken from the upper drawer.

Below this is shown a deeper drawer in which grudekoks is stored. To replenish the fire an ordinary sugar scoop is used to sprinkle a thin layer over the glowing surface in the drawer. This surface has an area of about $2\frac{1}{2}$ sq.ft. Grudekoks is a very clean fuel; it does not stain the hands or blacken material with which it comes in contact. The space above the fire drawer, where cooking is done, is shown to be inclosed as a cabinet which can be closed by a front upward swinging door. This inclosure is carefully insulated to conserve heat as much as possible.

Above the cooking space is a warming oven, and to one side is a water tank which can be filled at the top, the contents being drawn off at a faucet as needed. Whether this kind of a cooking device will appeal to the American housewife is yet to be determined. We cannot forget that even the fireless cooker has a host of friends. The Bureau of Mines hopes to get some information on this phase of the subject, but it is at least encouraging to know that this char, unbriquetted, has had a commercial demand that absorbed in one year over 400,000 tons. It can therefore well lay claim to careful consideration as a member in good standing of the family of fuels.

Flotation Methods Successfully Used in Great Britain To Clean Coal, Culm and Sludge

Sulphur, Less Attracted to Froth Than Coal, Reduced in Percentage—Culm, Three-Fourths Ash, Cleaned by Flotation—Good Coal Sold—Plants Use Middlings—Advantages of Clean Coal for Blast-Furnace Coke

BY C. H. S. TUPHOLME
London, England

HIETHERTO in Great Britain coal has been washed by various gravity methods, which, being dependent on differences in specific gravity, are, economically speaking, limited to material above a certain size. A supplementary, or complimentary, system has been needed for the washing of finer material.

Such a method has been evolved by the Minerals Separation Ltd.,* the owners of the froth-flotation processes used hitherto only for the separation of metalliferous ores. In this process the coal to be cleaned, after being ground in the majority of cases until the particles pass through a screen of $\frac{1}{8}$ linear inch aperture, is mixed with from three to four times its weight of water. The mixture is then agitated by suitable methods and a small quantity of special reagent added. The reagent may be an oil or a coal-tar product or the waste from some industrial operation, one pound, generally speaking, being required for each ton of material treated.

FROTHING AGENTS OF MANY KINDS CAN BE USED

Several kinds of "frothing" agent are available, the selection of which is made according to the type of the coal and the nature of ash it contains, for some frothing agents are capable of floating even the ash. Again, by successive addition of frothing agents, a fractional separation of raw coal into concentrates of varying grade can be made.

Thus, Bury reports that the flotation of Welsh coal can be effected best in the presence of the wash water from naphthalene washing after all the naphthalene has been removed. By this preliminary floating a deashed coal containing about 3 to 4 per cent of ash is obtained. If now, a further addition of about half a pound of paraffin per ton of coal treated is made and agitation and floating are resumed, a second concentrate in the form of "bone coal," containing 12 to 15 per cent of ash, is obtained. This is well suited for use under boilers. The final residue is, of course, a material of a high ash content—80 to 90 per cent.

Besides the above coal flotation reagents, cresols, oil of pine, naphthylamine, xylydine and various tar oils have been suggested and, in some cases, used with success.

Agitation in the presence of the reagent produces a multitude of minute air bubbles, to which the coal particles attach themselves. The loaded bubbles rise to the surface of the water and form a froth containing the coal, which accordingly is removed. Meantime such material as contains a high percentage of ash sinks.

*Apparently in Great Britain the Minerals Separation Co., Ltd., has entire control of the flotation of minerals by oil. In the United States and Canada other systems of flotation are in operation, though little has been done in the United States in the cleaning of coal by this method.

The process may be applied to a wide range of material: (1) Coking coals, (2) low-grade coals for fuel purposes, (3) dump wastes, (4) stocks of slack, and (5) washery sludge or other coal-bearing material. The main difference between the treatment of high-grade coal and low-grade waste lies in the respective proportions of coal and waste—a factor for which plant design readily makes allowance.

A striking feature is the facility wherewith one grade of coal is, by means of reagent control, separated from another without screening or classification. By flotation it is possible to separate into its component parts any kind of coal. The raw product from the mine is a mixture of what may be termed pure coal, bone coal and shale. The first of these may be defined as a coal substance having no free but only fixed ash. As a result of the frothing process the pure coal is separated,

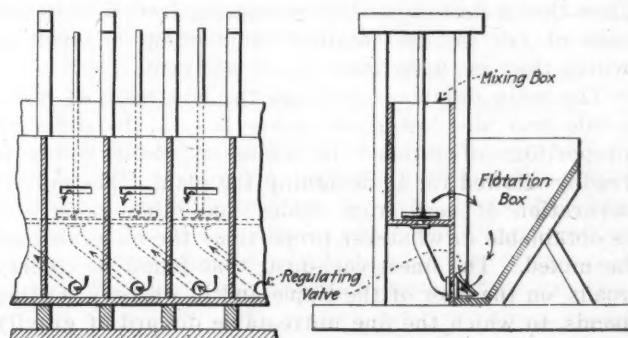


DIAGRAM SHOWING FLOW OF PULP IN MACHINE

Flotation reagent and water are introduced with coal in a mixing box, the mixer being driven by a vertical shaft. The product passes into the flotation box, where the froth rises and is scraped off with its coal. Thence it may be delivered by a conveying belt or trough.

the bone coal being left with the shale. In a later part of the process the bone coal is segregated. It may be added to the pure coal already obtained or it may be reserved for boiler, locomotive or producer uses.

The dimensions of a machine having a capacity of 672 to 1,120 net tons per 24 hours are as follows: Length, 37 ft. 6 in.; width, 16 ft.; height, 15 ft. 3 in. The coal for treatment, the flotation reagent and the water are introduced into the machine, the mixture passing at once to the first mixing box, the vertical shaft driving the mixer, or agitator, being indicated in the illustration.

Two steel joists running the whole length of the plant carry the horizontal shaft and gear boxes for driving the vertical agitator shaft, the agitators themselves being merely four-bladed horizontal paddle wheels. In front of each mixing box is a flotation box of V shape, the hand wheels being for the purpose of regulating the transfer of the material under treatment from flotation

TABLE I—RESULTS OBTAINED FROM WASTE MATERIAL AT THE ABERAMAN TIPPLE OF THE POWELL-DUFFRYN COAL CO.

	Percentage of Waste Material Recovered	Ash Percentage	B.t.u. per lb.
(1) Raw coal.....		70.4	2,280
Washed product.....	15	15.6	12,450
(2) Raw coal.....		67.6	5,230
Washed product.....	21	10.5	12,280
(3) Raw coal.....		48.5	4,390
Washed product.....	30	10.5	12,680

box No. 1 to mixing box No. 2 and from flotation box No. 2 to mixing box No. 3, and so on through the plant.

The material in the last box of the series forms the reject from the plant, practically all the coal having been separated out by the time that stage is reached. The flappers, or paddles, at the front of each flotation box are for scraping off the separated coal, which may be delivered to any appropriate form of conveying belt or trough.

The illustration shows the method of connecting each flotation box to the next mixing box—for example, flotation box No. 1 to mixing box No. 2—and so on as previously explained. The machine is designed for continuous working and operates automatically, one man per shift being capable of supervising plants capable of dealing with a maximum of 9,000 net tons in 24 hours. The application of the process to the treatment of all coal-bearing material is well established. Table I shows the results obtained from waste material at the Aberaman tipple of the Powell-Duffryn Coal Co.

Commercial operations on the Aberaman property show that a cleaned product containing from 6 to 10 per cent of ash can be obtained from dump material in which that impurity runs to 60 per cent.

The main difference between the treatment of high-grade coal and low-grade waste lies in the different proportions of product to waste—a factor which is readily allowed for in designing the plant. The perfect separation of coal from shales and other impurities is obtainable in whatever proportions the minerals may be mixed. The finest coal-dust, that found on colliery roads, on the floor of the tipple and in washery settling ponds, to which the fine untreatable discard of gravity washers is let, is readily amenable to treatment.

STRANGE TO SAY, PYRITE ALSO IS REMOVED

At first sight it might appear that the presence of pyrites in a coal would bar its treatment by flotation, as pyrites is one of the metallic minerals readily concentrated by the process. The reagents employed to treat coal, however, are different in character from those necessary for pyrites, and it is found that in the treatment of pyritic coal the coal floats more readily than the pyrite, with the result that the product obtained contains a lower percentage of sulphur than the raw material. Gypsum and other sulphates, practically speaking, are totally eliminated by the process.

It will be appreciated that the foregoing table includes, for purposes of brevity, final products only, and that the coals cited are readily separable into the constituent parts, thus yielding two, three or four products, as desired, each of which may be devoted to its appropriate use.

Actual results obtained by the flotation process include the following: (1) A coking coal was treated and two concentrates obtained. From 100 parts of the original, 62.7 and 13.2 parts of the concentrates were obtained, and 24.1 parts of residue were left. As the ash

content of the original, the first and second concentrates and the residue were respectively 24.0, 3.4, 24.5 and 78.5 per cent; the combustible recovery was over 90 per cent. The low ash content of the first concentrate and the relatively large proportion of the latter are noteworthy.

(2) Similar trials were conducted with a non-coking coal, 100 parts of which gave 41, 28.6 and 30.2 parts of first and second concentrates and residue respectively. The high ash content of the original coal—21.8 per cent—was reduced to 6 per cent and 9.1 per cent in the concentrates, the ash in the residue rising to 74.4 per cent. The recovery of combustible matter was nearly 85 per cent. As the original coal was high in ash, this must be regarded as a satisfactory result.

(3) A washery residue, which of course, contained a high quantity of ash—namely, 61.2 per cent—was treated to produce a combustible concentrate and a residue, which were obtained in the proportion of 33.2 and 66.8 per cent. The ash content of the former was somewhat high, 10.1 per cent, but under the circumstances, especially as a combustible recovery of 75 per cent is shown, the result must be considered satisfactory. The washery residue in its original state is of little or no value, and the production of a good fuel, coking coal, or other combustible material has much economic significance.

(4) Experimental runs have also been reported with washery fines as starting material. The ash contents varied from 13 to 45 per cent, and satisfactory yields of concentrates have been obtained such as have proved capable of being used for the manufacture of a good metallurgical coke.

(5) High efficiency is reported in the washing of a Welsh coal containing 10.1 per cent ash, from which a total recovery of combustible matter of more than 95 per cent was obtained. Thus, the washery afforded 87.2 per cent in the first concentrate, with 8.25 per cent of ash; 2.4 per cent in the second concentrate, with 19.2 per cent of ash, and a residue of 9.5 per cent, with an ash content of 72.1 per cent.

(6) Somewhat fuller details are available as the results of washing Derbyshire coal, analyzing 29.55 per cent of ash, 48.2 per cent of fixed carbon, and 22.35 per cent of volatile matter. A yield of concentrate of 75.1 per cent was obtained, which showed only 9.86 per cent of ash, the fixed carbon and volatile matter running respectively 60.24 and 29.9 per cent. The residue (24.9

TABLE II—RESULTS OF TESTS					
Original Sample Number	Ash, Per Cent	Cleaned Product		Tails	
		Weight, Per Cent	Ash, Per Cent	Weight, Per Cent	Ash, Per Cent
<i>Coke Coals</i>					
1	12.4	87.8	3.8	12.2	72.4
2	24.2	75.9	5.2	24.1	78.5
3	15.8	83.2	5.4	16.8	76.0
<i>Industrial (non-coking)</i>					
4	25.5	73.8	8.9	26.2	84.5
5	27.0	68.3	9.0	31.6	76.0
6	21.8	69.8	7.3	30.1	74.4
7	28.2	66.7	9.4	27.5	78.8
<i>Slack</i>					
8	30.0	68.9	12.2	31.1	80.0
9	30.5	71.0	9.6	29.0	86.5
<i>Silt</i>					
10	35.5	60.2	8.1	39.8	74.0
11	33.8	48.5	11.7	51.5	78.0
12	21.5	83.8	9.9	16.2	81.5
13	45.2	59.0	12.5	40.5	82.8
<i>Dumps and Washery Waste</i>					
14	74.0	16.8	13.0	83.2	86.6
15	40.3	53.0	7.9	47.0	75.8
16	61.2	30.2	10.1	67.8	86.1
17	76.0	14.5	13.5	83.0	87.6
18	62.2	24.3	9.6	70.7	84.8
19	62.0	22.8	9.25	71.0	82.7
20	75.0	16.2	14.0	83.8	88.5
21	63.8	28.7	10.8	71.3	86.5

per cent) contained 82.45 per cent of ash, with only 2.75 per cent fixed carbon and 14.8 per cent volatiles.

The most striking feature of the process undoubtedly is the facility with which one grade of coal is separated from another merely by the control of reagents and without the aid of any form of screening or classification. This property renders the process extremely easy to regulate: it requires only elementary skill and a little intelligence on the part of the operative in charge to produce the most profitable separation into: (1) Fine, high-grade, low-ash coal; (2) band, bone or bastard coal of dull appearance and high combined ash; and (3) shales, clays, gypsum, etc., the results varying, of course, with the type of coal treated and the purposes for which the products are intended.

Bone, band or bastard coal cannot be separated by any gravity treatment, and success such as this is new in the annals of washery practice. The ash content in band coal may be said to be almost entirely molecularly mixed with the carbonaceous substances, and no degree

TABLE III—RESULTS OBTAINED IN FLOTATION OF A COKING COAL WITH 10.14 PER CENT OF ASH

	Per Cent By Weight	Ash Content Per Cent
Pure coal.....	87.2	3.25
Bone coal.....	2.4	19.2
Shale.....	9.5	72.1
	99.1	

of crushing and washing would effect its purification. As it can be removed by froth flotation the true coal can be made available for the manufacture of fuels of a new standard. This suggests a probable revolution in blast-furnace practice. We have succeeded in making from such concentrates coke containing 4.8 to 5.0 per cent of ash, the physical strength of which is much greater than that previously obtained.

The main factors in the preparation of coal for coking were established in the course of extended investigations by a well-known firm of Cleveland ironmasters, who are now installing a plant having a capacity of 672 to 1,120 net tons per 24-hour day.

The samples on which the investigations were conducted consisted of high-grade coal associated with bone coal and closely admixed with carbonaceous shale, the ash content of the whole being about 12 per cent. The complete recovery of the pure coal was effected and the ash content reduced to less than 4 per cent. These experiments proved that the recovery of good coal would in practice be between 98 per cent and 100 per cent.

Table III shows a typical separation effected in the cleaning of coking coal carrying 10.14 per cent of ash in the raw state.

Obviously the bone coal may be mixed with the high-grade product if desired, but in this particular case it was proposed to make from the pure coal a high-grade coke carrying from 5 to 5.5 per cent of ash and to employ the bone coal for boiler or producer use, rejecting the shale as waste.

The value of the flotation process to ironmasters is indicated in Table IV and is based on the reduced consumption of coke per ton of pig iron produced as a result of the low ash content of the coke.

These figures may be resolved into a saving of 71.8c at normal exchange per net ton of pig iron produced from ordinary Cleveland ironstone, the bone-coal constituent of the original coal being utilizable at its purchase value in industries other than the manufacture of pig-iron coke.

For the production of coke for metallurgical purposes various coal-washing devices have found employment, efficiency being dependent on the difference between the specific gravities of the coal, shale and other impurities.

By means of these gravity processes, which involve prior or subsequent screen sizing for their effective operation, moderately good results are obtained on various sizes between 2½-in. and, say, ½-in. or ¼-in. aperture. But on material which passes the ½-in. or ¼-in. screen established methods of specific-gravity washing yield but poor results, whereas the extremely fine dust or silt cannot be cleaned by jigging or classification.

Efficient specific-gravity washing thus is limited to coarse material, and any attempt to include the smallest size in the washing process results in serious trouble, owing to the finely-divided shale being included in the washed product, which raises the ash content and obstinately retains water. Even with the coarser sizes the efficiency of these processes is entirely dependent on the nature of the coal.

Run-of-mine, generally speaking, consists of a mixture of high-grade coal (carrying little fixed ash) bone coal (relatively high in fixed ash) and shale carrying various small proportions of carbonaceous matter, according to the nature of the deposits. Other impurities, such as iron pyrites, calcium sulphate, etc., sometimes are present. The mixture in some cases is intimate, in others the constituents occur in layers of greater or less thickness. Where the layers are thin or the separate constituents finely divided, effective separation, of course, is impossible, unless the material is crushed fine enough to separate these constituents.

ASH PARTICLES IN COAL GREATLY WEAKEN COKE

In these cases it is clear that jig washing cannot be fully effective. Similarly gravity processes fail where the specific gravity between the high-grade and low-grade material is only small. Shale and low-grade bone coal are doubly harmful constituents of a coking coal, as not only does their presence increase the ash content of the coke but each particle present forms a center of weakness from which cracks radiate. It is chiefly due to the presence of these foreign substances that fine coke, or breeze, is produced. It has become customary to lessen this effect and to produce a more homogeneous product by crushing coking coal to about ½ in.

Froth flotation is, as has already been stated, applicable to the treatment of coal which will pass an aperture of approximately 0.1 in. square; it is independent of any difference in the specific gravity of the constituents and will separate with equal effectiveness the coarsest and the finest of suitably crushed product, classification being neither necessary nor advisable. By means of froth-flotation high-grade coal can be separated from bone coal and bone coal from waste, which makes it evident that the method has a much wider range of efficiency than specific-gravity methods.

Several full-oven charges of coke have been made on material thus prepared by flotation, and the following advantages obtained:

TABLE IV—SAVING EFFECTIVE IN COKE PER TON AT BLAST FURNACE

Coal	Per Cent Ash in Coal	Coke per Net Ton Of Pig-Iron, Lb.
Mine coal.....	12 to 15	2,500
Jig-washed coal.....	8	2,300
Froth flotation.....	3 to 4	2,100

(1) Ash reduction—saving in cost of handling, particularly where the product has to be transported some distance before it reaches the coke oven.

(2) Economy in coking—the product is more highly bituminous, yields a richer gas and a larger quantity of byproducts. Furthermore, the ash reduction makes it possible to charge the ovens with coal that will yield a coke with greater thermal capacity per pound.

(3) Production of superior coke—the coke produced from flotation-washed material is superior to any other type; it is harder and denser; it contains a minimum quantity of ash—sometimes under 4 per cent; it resists the crushing effect of the blast furnace, and offers all those advantages that only such a coke could offer.

(4) Economy in furnace space—where a coke cleaner than usual is employed there is room for an increased quantity of iron ores and fluxes. At an iron works in the North of England it recently was proved that flotation coke melted 17 per cent more iron than an equal weight of normal coke; in other words, 85 parts of flotation coke did the work of 100 parts of normal coke.

(5) Minimum of silica owing to ash reduction—less coke is required and less limestone flux per ton of ore.

(6) Economy of thermal efficiency of blast-furnace—the production of slag is reduced. Fewer thermal units are therefore employed in its production, and fewer taken from the furnace by the molten slag.

(7) Less fines—a dense coke affords a greater quantity of large coke, a lesser quantity of fines being removed in screening. The total value of the product of the oven thus is raised. At a large steel works in the North of England it was found that only 1½ to 2 per cent of coke breeze was made in place of 7 to 8 per cent which was produced when washed coal had been used.

(8) Maximum thermal efficiency at critical zone of furnace—the resistance of the hard coke to the crushing effect of the furnace burden minimizes the tendency toward coke consumption in the upper zone of the furnace, and the maximum number of heat units is developed at the tuyere lines; or, in other words, at the point of highest thermal effectiveness.

(9) Economy in transportation—savings are effected in the cost of transportation in two ways: (a) Directly, by eliminating the ash for the transportation of which freight charges must be paid, and (b) indirectly, for, owing to the superior hardness of the coke less fines are produced, and the maximum quantity of product arrives at its destination as large coke, a point most important to foundrymen and smelters.

COAL FURNISHES ITS OWN FLOTATION OIL

Several plants are in course of erection where by-product ovens are employed for coking coal, the process in such cases being independent of outside sources for the supply of reagents, as coal tar produces everything that is required.

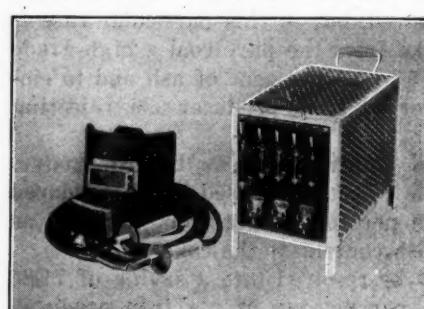
The cost of flotation is in the operation itself, and as the cost of the flotation oil is almost negligible, the main charges are for power and labor. It has been stated that the power cost is 1.34 kw.-hr. per short ton of coal treated, so that a few cents per ton covers this cost. Labor charges are small, and interest and depreciation cost little, as a plant that is capable of treating 1,000 net tons of coal per day costs \$130,000. Allowing an interest and depreciation charge of 20 per cent per annum and 300 working days in a year, the charge will be less than 9c per net ton of coal treated.

Welders for Rail Bonding and Repairs

TWO new portable electric arc-welding machines recently have been constructed for mine use. The lightweight welder weighs only 46 lb. and is intended primarily for rail bonding. The resistance is made up of coils of nickel-chromium wire, mounted by a patented method on refractory porcelain insulators. Sufficient ventilation is provided so that the machine operates well below the critical temperature of the resistance wire. This welder can be used with any line potential between 175 and 275 volts. Four knife switches control the welding current. With these switches it is possible to get ten combinations giving current values from 20 to 150 amperes. The shunt welder also is a resistance machine but with a shunt connection which is used when the work is positive in polarity and the electrode negative. With this shunt in use, the machine has practically the same characteristics as a motor-generator outfit—that is, low voltage, short arc and uniform welding heat. The welds made in this manner are tough and machinable.

If desired, the shunt welder may be used, unchanged, as a straight resistance machine. It may be used with the shunt for repair welding and without the shunt for rail bonding.

The resistance element in this machine is of the same type as that in the other welder. It will not be overheated by a continuous short-circuit at 280 volts, and may be used on any line having 150 to 280 volts potential. It weighs about 100 lb. Both machines are manufactured by the Ohio Brass Co., of Mansfield, Ohio.



FORTY-SIX POUND WELDER
Is suitable for rail bonding and will work with any potential between 175 and 275 volts.

Welders of the types above described find wide application at mining plants as the uses to which they can be applied are many and varied, embracing both field and shop repair work. As a result they are useful pieces of equipment.

Longwall Retreat with Coal Conveyors Modified so as To Make Each Face Independent of Every Other

Air Rooms Are Driven in Pairs so That It is Not Necessary to Maintain Communication Between Working Faces in Adjoining Sections—Faces Are Made Long Enough to Keep Cutting Machines Busy

By F. C. CORNET*

IN MY article that appeared in *Coal Age*, Jan. 4, p. 7, I showed a working method much like that in Fig. 1 but with single instead of twin air rooms. The air ran up the single air room and split at its head, the two air currents running back along the working faces of two separate sections and returning each by the conveyor rooms of its particular section. As the sections are not, or may not be, kept equally advanced, the air must travel the few feet between the faces of the sections by an airway which it may be difficult to keep open. At least there might be cases where the operator might fear that he could not keep such an airway free from falls. In Fig. 1 of this article is shown a way in which this objection might be met.

But here a few words of comment on the plan may be interposed. To the left of the main heading, shown in the center of this illustration, the workings are retreating and on the right they are advancing. The following description applies more specifically to the latter, but the reader will have no trouble in understanding, from the description of the right or advancing area, how the left or retreating area is to be operated.

Referring to the Second Right Heading, in Fig. 1, it will be seen that the rooms have a total length of 820 ft. and that the pillars between rooms are 400 ft. wide. All these pillars, however, are not solid. Forty feet inbye of the room separating two successive sections, an extra air room is driven, as shown, thus creating what I have designated as "twin air rooms."

Each twin room receives air direct from the air-course through a separate pipe overcast, as shown.

While the outbye member of any twin airway along the heading insures the ventilation of the face of the outbye section, the inbye member of the same twin air-way conveys air to the face of the section next inbye. The face of every section being ventilated by a separate air room, it is no longer necessary to maintain a connection between sections, and so none is shown in Fig. 1.

As each section is independent, mining in any section may forge ahead of or lag behind that in contiguous sections, as the operator may decide. Each face in Fig. 1 of this article is twice as long as the faces in Fig. 1 of the previous article but they get twice as much air. Hence the number of men who may be employed per lineal foot of face (or lateral heading) is the same in both cases.

It is true that with this arrangement the cutting machines cannot pass, rapidly at least, from section to section, but the two faces of a section taken together offer enough development to the cutting machine to keep the latter occupied without seeking work in other sections. As to supervision, it is to be expected that a face development of 800 ft. is all that any assistant foreman will be able efficiently to supervise, especially if the same employee has charge also of the loading station connected with his section, which probably would be the arrangement made.

The distance between successive lateral headings has

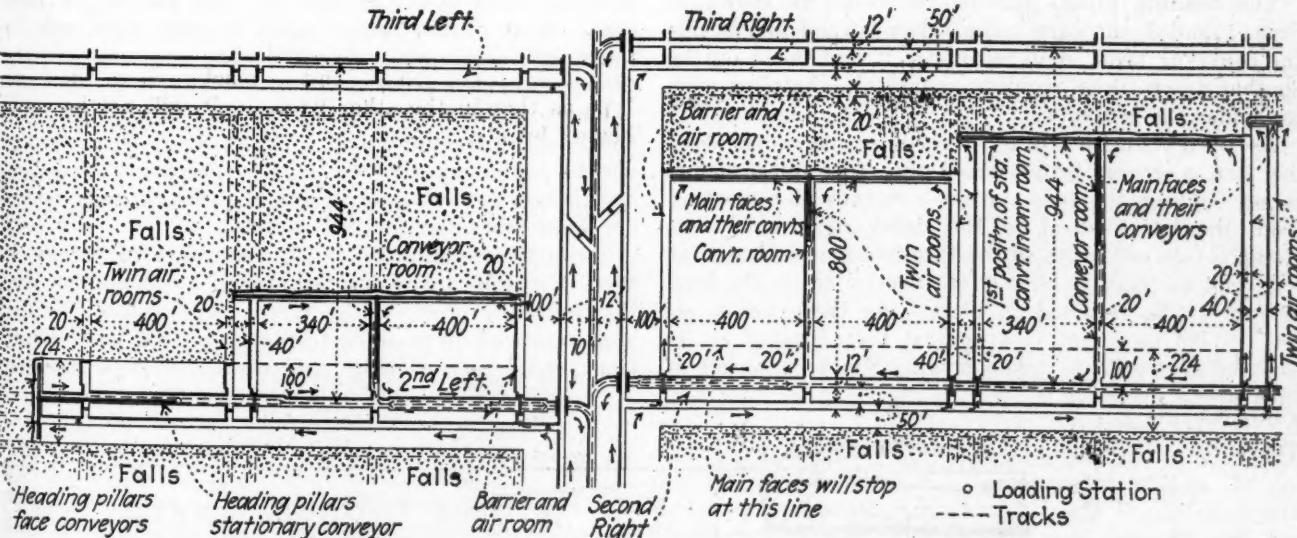


FIG. 1—RETREATING AND ADVANCING LONGWALL METHODS WITH EACH SECTION INDEPENDENT OF THE OTHERS

Of course, the longwall faces themselves are all worked retreating, but the order in which the individual sections are started may be made either retreating or advancing at will. The retreat is shown on the left and the advance on the right. By the use, where the sections join, of two air rooms at 60-ft. centers, each of the sections is separately ventilated, so that it is not necessary to maintain a connection between them.

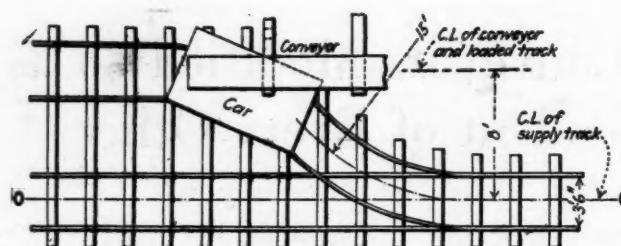


FIG. 3—METHOD OF BACK SWITCHING UNDER CONVEYOR
By this method the cars come continuously to the discharge end of the conveyor, saving much time in spotting them.

been increased in this plan so that it is now 944 ft. from center to center. The former arrangement reduced the narrow work considerably, but this layout makes a further important reduction. The great length of the rooms (820 ft.) consequent on the increased distance between lateral headings, together with the inadvisability of using conveyors more than 400 ft. long, caused the designer to locate the loading stations in the conveyor rooms themselves.

A loading station is placed in the beginning about half way up the room, as is shown in two of the sections off second right in Fig. 1. When mining gets close enough to this first location to interfere with the handling of cars on the tail track, the loading point is moved back toward the neck of the room, the new position chosen being the same as that shown in the first section off second left. Here the stationary conveyor is shown in its second and final location which is within that zone of coal, 100 ft. wide, which is left along the upper side of all lateral headings and which ultimately will be recovered when the heading pillar is withdrawn. This 100-ft. zone is shown also at the left of Fig. 1.

At both their locations in the conveyor rooms nothing prevents laying the conveyors as shown in Fig. 2, the loading end being curved gently upward instead of somewhat abruptly, as was shown in Figs. 2 and 6 of the previous article. As shown in Fig. 2 of this article, the more desirable inclination and the head of the conveyor can be included entirely within a space of 50 ft., which is short enough to permit the curved part of the conveyor and the loading tracks to be all laid within the 100-ft. zone above referred to.

The heading pillars will be recovered as shown in Figs. 1 and 3, the cars being taken beyond and beside the conveyor head, switched under it and taken out by another track, thus avoiding separately shuttling each car under the conveyor.

As the cutting machine proceeds on its work along the face, a line of props, called the "face line," should be set between the face and the conveyor at a distance from the latter equal to the depth of a cut. The distance between props in the face line may be less than 4 ft. and as much as 8 or 9 ft., depending on the kind of roof to be retained in place. As these props are set, the old face line, now against the conveyor on its working face side, is taken down. Ninety per cent of such props are good for further service. The conveyor is now moved against the new face line. Without loss of time a break line is then set against the conveyor on the side away from the face.

This line is made of two or three rows of props set 2 or 3 ft. apart. As only two break lines are maintained, the old line is now removed. This is done easily if the props have been set on wooden slabs 15 in. long, and these slabs in their turn have been laid on fine coal.

In the salvaging of props, no risk to life or limb should be run. If mining is evenly and regularly conducted, it will be found practicable in most cases to save a large proportion of the props without any risk being taken. But no props ought to be left standing behind. Those which cannot be knocked down otherwise must be dynamited. An expert timberman or the average assistant foreman knows how to dispose of the most refractory prop by means of a quarter of a stick of dynamite extended at the end of a 16-ft. joint of half-inch pipe, or its wooden equivalent. Props left standing in the rear are much like the so-called "protective stumps" left in pillar work. Instead of protecting anything or anybody they are a source of trouble in that they disturb the regularity with which the roof breaks.

In some cases it will be preferable to make the break lines of cribs. These should be erected on wooden slabs resting on slack. When a mine operated on the system above described, or a modification of it, works irregularly, it may prove good policy to adopt the crib exclusively in constructing the two break lines, using props only for the face line.

Difficulties are quite likely to occur on a longwall face when a long shutdown occurs, especially in a mine in which the roof hangs and does not collapse as close to the break lines as desirable. In such a case an undue burden often rests on these supports. In cases like these when there is reason to believe that a long shutdown is in sight the break lines should be supplemented to tide over the idle period. Thus two good rows of supplementary cribs could be built, one between the two rows of props forming the regular break lines, the other in the place of the conveyor against the face line of props, the conveyors being placed in the air and conveyor rooms to make room for the cribs.

There will be few mines operated along the lines described above where temporary supplementary timbering, well done and done in time, will fail to keep the working faces open through the long periods of idleness. Most of the timber used in such work will be found still serviceable when the time comes to put the faces in working order.

I have no hesitation in saying that after a long shutdown—a protracted strike, for example—less repairs will be found necessary in a mine operating according to this new system than in one of same capacity where the room-and-pillar method is used.

Intimate acquaintance with the roofs of mines in West Virginia and Kentucky makes me confident that the timbering practices described, more or less modified and improved if need be to meet unusual local conditions, could be used with good results in those regions.

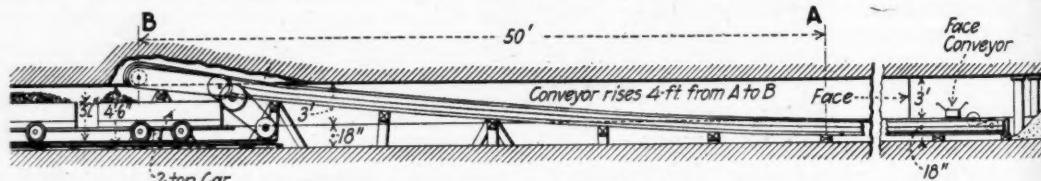


FIG. 2—CONVEYOR 400 FT. LONG, SET IN ROOM
Instead of lifting up the conveyor head steeply it can be given a grade of about 8 ft. in 100 ft. at its discharge end. At the loading end it is kept down in the cut that was made to give passage to the car while the room was being driven. In consequence the face conveyor delivering to it can be kept on the coal bottom.

Rubber Is to Be Imported as a Liquid

HITHERTO the milk or latex of the rubber tree has been coagulated before being shipped, this being originally performed by smoking it in the smudge made by burning uricuri nuts, as in Brazil, or by adding chemicals by which the same or a better result is obtained. Under the Hopkinson process the rubber is extracted as liquid from the latex and brought in that form to the place where it is to be manufactured.

It is claimed by the U. S. Rubber Co. that the action of kneading the rubber into the required shape, area and thickness by heat, pressure, tearing and mastication are harmful to the product and that the rubber produced from the liquid form without such intermediate action shows a substantial increase in tensile strength and resistance to abrasion, two vital matters in crude rubber. The product also is said to be unusually uniform.

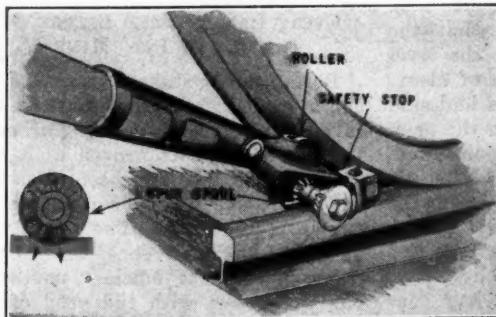
There is the further advantage that fabrics can be made more readily to absorb the liquid than to knit up with the rubber dough, the latter process being one in which much pressure is used. It is also stated that rubber in the form of a solution injures the threads of the fabric to which it is applied.

Pinch Bar with Changeable Grip Cannot Slip and Fall and Will Block Wheel

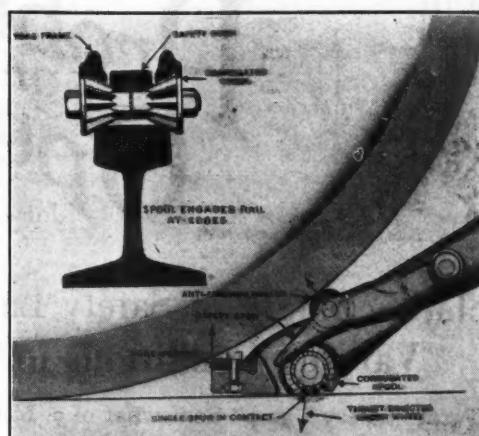
CAR-moving bars usually have only one grip. This soon wears on the rail and until it is sharpened the service given by the bar is unsatisfactory. Furthermore, when the car is induced to move by the pinch bar the point soon reaches a critical position on the wheel where any further movement of the car will rapidly move the wheel out of range of the point of the bar. In consequence the car mover must watch carefully lest he continue to bear so long on the bar that it will suddenly slip and lose its hold entirely, dropping him onto the tracks.

In consequence his fingers will be caught between the rail and the bar. This is a sufficiently severe accident but a worse may occur if the man is barring the car alone and uphill. The pinch bar being removed, the car may come back on him when he thus falls, and if it does not hit him he may console himself with the thought that he has lost only his labor and not his life. Fortunately a grade up which one man can pinch a car rarely is steep enough for a car to run back on it. But even with two men there is a risk, for the other man may not act with judgment.

To give the grip on the rail which is so important in



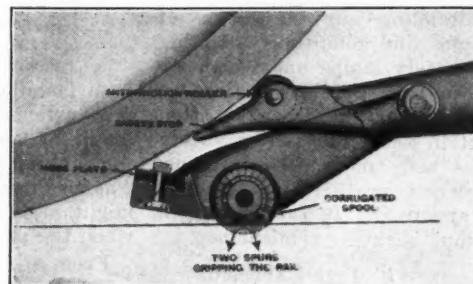
PINCH BAR WITH SAFETY AND TIME-SAVING FEATURES
This bar has a safety stop to prevent a sudden loss of grip on the wheel, a spool grip that being changeable will always give a firm hold and a nose plate that if the pinch bar is left on the rail will prevent the wheel from running backward.



DETAIL OF GRIP, NOSE PLATE AND SAFETY STOP

In this view the safety stop is not in operation, for the car has not moved far enough to let the handle down near the rail. The roller is and remains in contact with the wheel.

a car mover, the Smiley Car-Mover bar has a pair of corrugated spur spools, or wheels, so positioned that they grip or bite at four points on the lateral edges of the railhead, thus absolutely preventing the bar from slipping under load, no matter if the rail is greasy or even



CAR MOVES FORWARD AND SAFETY STOP IS AT WORK

The handle is suddenly arrested in its downward way by the safety stop. The pinch bar is so placed on the rail and under the wheel that it can be left unattended and will hold the car from rolling backward.

covered with thin ice. The spools are heat-treated so as to give extreme hardness without brittleness. Worn spur edges can be quickly replaced by simply loosening the nut of the holding bolt and turning the spool so that a new edge will come in contact with the rail.

To prevent the sudden falling of the bar when in use, due to movement of the car, the lower or short end of the handle casting is extended to form a safety stop which makes a positive contact with the under surface of the wheel when the bar handle is depressed to within about 8 in. of the rail. This arrests or greatly retards the downward motion of the handle of the bar, thereby preventing serious injury to the operative, such as bruised knuckles, broken knee caps, a sprained back or a wrenched neck.

The combined action of the spur spool and the safety stop prevents the car from rolling backward on grades. Furthermore it will hold all the headway gained in pinching up a grade, and it enables a single operative to do the work of two on slight grades, as the car is securely blocked, thus permitting the operative to leave the bar under the wheel while he goes forward and sets the brakes or places permanent blocking. A slight depression of the handle enables the bar to be removed. The bar is manufactured by H. D. Ganung, 209 Elk St., Syracuse, N. Y.



Problems of Operating Men

Edited by
James T. Beard



Relative Safety of Safety Lamps Under Varying Conditions in Mines

Term "Safety Lamp" Somewhat of a Misnomer—Fatal Gas Explosion Makes Plain the Necessity of Extraordinary Care in Use of Safeties When Testing for Gas

REGARDING the use and care of safety lamps in mines, as suggested by several correspondents, in letters appearing recently in *Coal Age*, I desire to add my quota. The occurrence of a fatal explosion of gas and dust at our Wakesiah mine, Nanaimo, B. C., Nov. 24, 1922, prompts me to do this.

Notwithstanding our knowledge of the principles and conditions affecting the use of safety lamps and which we are prone to pass up, in practice, we fail to realize what has been so often pointed out in *Coal Age*, that a safety lamp is not safe under all conditions, but only when properly constructed, cared for and used. In fact, the term "safety lamp" is rather a misnomer.

THE WAKESIAH MINE EXPLOSION

For the benefit of those who may not have heard or read of the accident in the Wakesiah mine, I will briefly recount the occurrence. It was an explosion of gas augmented by coal dust and cost the lives of two men, Gilbert McBroom, a pumpman; and Alfred Odgers, a fireboss. The former was killed by the force of the explosion, while the latter was asphyxiated by the afterdamp.

There were thirteen men working on the nightshift, at the time the explosion occurred. With the exception of the fireboss, Odgers, who carried a Wolf safety lamp, all of the men were equipped with Edison electric head lamps. The eleven men who escaped without serious injury were all working on the intake side of the explosion. McBroom, who was killed by the blast, was working on the return at a point 250 ft. distant from its origin.

EXPLOSION STARTED IN BRUSHING IN SLANT HEADING

The place where the explosion started was a slant driven up the pitch off the first left level on the new slope. Two other places had been turned from this slope and were driven in a direction to parallel the level. In this section of the mine, the coal was 3 ft. 8 in. thick and overlaid with from 3 to 5 ft. of shale above which is a thinner seam of coal varying from 20 to 24 in. in thickness.

184

The seam is worked longwall, the roads being cogg'd on both sides. The roof is brushed in order to gain the required headroom. The brushing in the slant where the explosion started was about 3 ft. thick and had exposed the upper seam of coal. In such a case, it was not uncommon to get a little gas in a place.

COMPRESSED-AIR PIPE SYSTEM IN USE

A two-in. compressed-air pipe had been installed in the level and a 1½-in. pipe extended up the slant. A 50-ft. length of hose was attached to the pipe for running a jack hammer. This hose was also used to drive out any gas that might accumulate during the night or when the place was not working.

From the evidence given at the inquest, the fireboss, Odgers, had fired a shot for two miners, about thirty minutes before the explosion occurred and about 250 ft. distant from that point. On leaving their place, he told them he was going to clear out some gas from a place above to make it ready for the morning shift. That was the last seen of him until his lifeless body was found a few hours later.

RESCUERS ENTER THE MINE

Following the explosion, a rescue party entered the mine and within thirty minutes from the time the blast occurred they had found and carried out the body of McBroom, who was killed at a point on the return 250 ft. distant from the origin of the explosion. The body of the fireboss was not found until some time later, about 7 a.m.

The investigation showed that the hose had been changed from the level to the slant, for the purpose of clearing out the gas as the fireboss had said he was about to do, on leaving the men. The end of the hose, it was observed, had been deflected upward into the brushing and was blowing down the slant. The Wolf lamp, carried by the fireboss was found 21 ft. from the end of the hose and the man's body 84 ft. beyond the lamp. His cap bag containing 16 detonators or electric fuses, still intact, and a shotfiring cable were found lying at the stopcock, where the fireboss had turned on the compressed air.

Judging from the position of his lamp, the fireboss, after turning on the compressed air, had evidently advanced toward the face of the slant, against a highly explosive mixture that was blown from its lodgment by an air pressure of 90 lb. per sq.in. at the nozzle of the hose, which was pointing down the slant. The velocity due to this pressure may have been anything from 2,000 to 3,500 ft. per minute.

Though the lamp was provided with a double gauze, it apparently failed to isolate the flame of the gas burning within the lamp. The gauze chimney, as in all Wolf lamps, was further protected by a corrugated steel bonnet. Examination of the lamp when found showed that it was in perfect condition, properly assembled and the gauzes and glass undamaged. Later, the same lamp was subjected to a severe test in an explosive mixture, at the lamp-house, and withstood that test four times in succession.

HEATING OF LAMP CAUSED IT TO FAIL

It is important to note, here, that a close examination of the interior of the gauzes showed the wires had been subjected to an intense heat, which was not apparent on the outside of the gauze where the wires showed little signs of having been heated. All who examined the lamp and observed the tests to which it was subjected in the lamproom are fully convinced that this lamp failed in the mine.

As a result of this experience, all of our firebosses are now required to carry two lamps, one a double-gauze Wolf safety lamp, having its flame set so low that it could only be used as a gas tester and eliminating, as we hope, some of the dangers of the lamp becoming heated when used for illuminating as well as for testing purposes. The other is a twin-bulb electric headlamp that can be turned off when making a test for gas.

EVERY LAMP TESTED BEFORE BEING TAKEN INTO MINE

Before being taken from the lamp cabin, each safety lamp must be tested in an explosive mixture. For a time, these requirements proved a little irksome to men who had been accustomed, for thirty-five years or more, to practice in the old way. The lesson taught by this sad occurrence, however, has impressed all our officials, particularly our firebosses, with the need of exercising the utmost caution in the use of their safety lamps.

In closing, let me say that the question of the relative safety of safety lamps in explosive mixtures, and even

in low velocities, appears to me to be worthy of further investigation and report. In my opinion, the fact that this lamp had been in use, for illuminating purposes chiefly, seven hours prior to its failure, indicates that it was overheated at the time and that probably caused it to fail. Is it not time when we can hope for some other means of testing for gas than by the safety lamp, which always introduces an element of danger?

W. H. MOORE,
Manager, Wakesiah Mine,
Western Fuel Corp. of Canada.
Nanaimo, B. C.

Tamping Holes in Blasting

Different experiences the result of varied conditions, or differences in practice—Steel bars a menace to safety—Work of experts in demonstrating explosives.

FREQUENTLY, when reading the letters of correspondents in *Coal Age*, which invariably expresses the views of practical mining men, I have been at a loss to explain the difference in the conclusions and experiences of men engaged in the same undertaking. More than once, I have asked myself the question, Is this difference the result of varied conditions in mining; or does it come from difference in the habits and training of the men themselves?

Only recently, I became deeply interested in an article by John Rose, former district mine inspector in Tennessee, in which he expressed opinions at variance with the experiences generally expressed by coal-mining men of long practice. (*Coal Age*, Nov. 30, p. 880.)

DISPARAGING DANGER

Commenting on the remarks of a previous writer in reference to the use of steel tamping bars being dangerous in blasting, Mr. Rose states that, while he does not wish to be understood as approving of the use of steel tamping bars, he does not consider the danger as great as the previous writer would have us believe. At the close of his letter, he again remarks that, during his experience of thirty-five years in mining in Tennessee, he has not seen or heard of an accident resulting from the use of steel bars for tamping.

While it is true that accidents from this source are not common, still I cannot agree with any one who assumes an attitude of indifference in respect to a condition that may cause an accident, with every probability of the result proving fatal.

FATAL USE OF STEEL BARS

In contrast with the claim of this writer, let me say that we have experienced two fatal accidents, in Northeastern Kentucky, both of which were known to be the result of using iron tamping tools. One of these accidents occurred at Willard, Ky., in 1920; and the other at Betsy Layne, in 1921. Others have occurred that were ascribed to the same probable cause, but gen-

erally lacked the necessary evidence to prove the fact.

The use of iron tamping tools, like coal slack for stemming, is generally recognized as dangerous practice. Nothing is to be gained by assuming that they are anything other than bad. Every effort should be made to discourage such practices, regardless of the fact that with proper care and caution, accidents may be avoided.

In this connection, let me say that to assume present-day miners can be depended on to use different size cartridge sticks to avoid danger in charging a hole drilled with a worn bit; or to suppose that they will employ heavy shooting paper when making up their cartridges; and use special care in placing their shots, is to expect more than what is warranted by actual facts and observation.

Seldom do we find a miner with more than one cartridge stick; more often he has none at all. We are most likely to find him using ordinary newspaper for shooting paper, and stemming his hole with coal slack. It is these conditions that have prompted me to offer a few comments in the interest of greater safety in blasting.

LOOKING BACKWARD ON DISCIPLINE TWENTY YEARS AGO

Looking back on mine discipline of, say twenty years ago, and comparing it with the conditions that have existed in our mines during the past six years, one is led to believe that better mining conditions and not improved mine regulations have been our salvation in many instances.

Owing to the fact that mine workers of today cannot be depended on to do the safe thing, mine officials and particularly mine foremen and safety inspectors should make every effort to see that the miners in their charge are provided with the safest tools and employ the safest practices possible.

For several weeks, it was my good fortune to be required to check up the results of three different blasting experts, employed by different concerns to demonstrate the use of the different explosives manufactured by their respective firms. Each of these experts were engaged in soliciting the business of a large coal corporation operating some seventy mines.

APPLYING EXPERT KNOWLEDGE IN THE MINING OF COAL

My observation showed that each expert used the same precautions, employed about the same amount of explosives, and obtained results that were almost identical as to the amount of lump coal broken down and the general results of the shot.

There were many old American miners employed in those mines. When these were asked their opinions concerning the shooting of their places, they naturally resented the idea that any one could get better results than they could themselves. However, my observation convinced me that, in most all of the places, each of the three experts was able to get better results

than the old miners who worked the places.

The only difference between the miner and the expert, in the performance of the work, was that the expert took far greater care in preparing his stemming and tamping the hole. Special care was exercised to get all small stones out of the clay, which was then worked in the hands until it had the consistency of putty.

The first dummy was placed gently and pressed firmly back on the charge. Only permissible explosives and electric blasting caps were used and the entire hole was tamped hard to the mouth. Their methods proved safe and the results exceptionally good.

Pikeville, Ky. GEORGE EDWARDS.

Caviling System in England

Choice of working places, by lot, each quarter—Origin of system in North of England—Miners choose their own partners—System gives satisfaction and creates harmony.

In connection with improving the conditions in coal mining, to which reference has been made by other writers, kindly permit me to mention what is known as the "caviling system" practiced in the North of England. Whether or not it could be applied with equal success in this country would have to be determined by trial. Of one thing, however, I am certain; it insures a square deal for all the miners and is profitable for the operator.

In that system, all the working places in the mine are raffled off four times a year. At the end of each quarter, the miners draw lots, which determines the place where each must work for the next three months. Every man accepts his lot with goodwill. If he has drawn a bad place, he consoles himself that he may do better next quarter.

ORIGIN OF THE "CAVILING SYSTEM"

As far as I know, the caviling system originated in the North of England. Evidently, its purpose is to have all miners share and share alike. In every mine, there are good and bad places and the invariable problem of a mine foreman is to keep men at work in the poorer places.

In this country, when a man finds that he must work in a place where he can earn a mere existence, he generally prefers quitting. As a result, such places will often stand idle so long that they get in bad condition. The first newcomer that happens along is sure to get one of these places, and the foreman must put it in safe condition before allowing a man to start to work there.

It will frequently happen that a foreman finds that he has under estimated his running expense for the month. Then, in order to prevent a "bawling out" by his superintendent, he prefers to let these places stand idle for a time rather than timber them.

Before next month rolls around, one or more of the places may have caved tight, causing a loss of much coal and

track. It will often happen that an empty car, left standing at the face, is caught by the fall and cannot be recovered. The trouble may not be confined to a single place, as the cave will often shut off the ventilation from adjoining places and require much work and expense before the trouble can be remedied.

The caviling system has the advantage of eliminating these troubles, since the foreman is then bound to give the same care and attention to all places where men are working. There is besides another feature that should be mentioned, as it tends to create harmony. Every miner is permitted to choose his own partner.

When a man is compelled to work, from day to day, alongside of a man

with whom he is not on friendly terms, there is sure to be trouble. Neither of the men can do their best work and, before long, one or the other will find some excuse for quitting. In my own experience, on a few occasions, I have been sent to dig coal with a man who was a foreigner and could not speak English well enough for me to understand him. At the best, I can assure you the experience was disagreeable.

In closing, let me say that the caviling system, in England, gave good satisfaction to all concerned. There was harmony among the miners, and the operators derived an unquestioned benefit. I do not know why a similar system could not be worked to the same advantage, in this country.

Frontier, Wyo. WILLIAM ALLAN.

Inquiries Of General Interest

Action of Safety Lamp Flame in Firedamp Mixture

Observed Elongation of Flame Assumed as Due to Increased Velocity of Air Touching the Flame—Flame Lengthened in Effort to Reach Air Required for Combustion

KINDLY permit me to submit for the consideration of *Coal Age* and its readers a question of theory that has engaged my study for some time and which I am anxious to see discussed by others. On numerous occasions, I have propounded the question and my solution of it to firebosses and other mine officials; but have almost invariably received the answer that the lengthening of a lamp flame in the presence of gas is due to the burning of the latter or, as expressed by some, "the pull of the gas."

To my mind, this general and indefinite explanation, if such it may be called, conveys no positive idea and fails to satisfy the inquiring mind. Believing that our knowledge is of little practical value, except as we apply it to determine the causes of observed effects, I have studied to ascertain the cause of the lengthening of the flame of a safety lamp burning in an atmosphere charged with gas. Following is a brief summary of my conclusions:

It is a well known fact that all fluids, liquid or gas, if free to move, travel in the direction of the greater pressure. For example, a ventilating fan may act to increase or to reduce the pressure in the fan drift and, as a result, the air current is moved from the fan or towards it, according to the greater pressure, the ventilating pressure being above that of the atmosphere in the first instance and below that of the atmosphere in the second.

Now, applying this principle to a safety lamp, let us first assume that the lamp is burning in normal air, no

gas being present. Naturally, the air in contact with the flame of the lamp is heated and expanded, which causes it to rise. In that condition, the air exerts a lesser downward pressure than at its normal temperature and an inflow of air toward the flame below is the result, the flame maintaining a certain height.

Assume that the lamp is now inserted into an atmosphere charged with gas. This mixture being lighter than normal air, the upward air pressure is still further increased and the downward pressure decreased, with the result that the inflow of air toward the flame is more rapid than in the first instance. This increased velocity naturally forces the flame upward and lengthens it precisely as a flame is lengthened by the action of a blowpipe.

To test this theory by other means I resorted to the following simple experiment. Slowly lower a piece of cardboard over the chimney of a common kerosene house lamp. As the cardboard approaches the top of the chimney, the flow of the heated air rising from the lamp flame is materially impeded, the flame itself is expanded and partially fills the chimney.

My explanation of this phenomenon is that obstructing the flow at the top of the chimney causes the air retained within to become heated to such an extent that its downward pressure is considerably reduced, and the increased velocity (?) of the inflowing air lengthens the flame in a similar manner to that observed in the safety lamp.

Another instance bearing on this

theory is the observed expansion of the normal flame of a safety lamp when the latter is carried into a place having a somewhat higher temperature. Most firebosses and other mine officials have observed this action of the lamp flame when entering a close warm place in the mine. The flame of the lamp will gradually expand and smoke the gauze and the glass cylinder. I would explain this effect in the same manner as previously described.

To my mind, whether the lamp flame is at a normal height or has been reduced, in order to observe a cap, the burning of the gas, contained in the air entering the lamp, does not act to increase the height of the flame as so many believe. Assuming a normal lamp flame, the supposition that the burning of the gas in the air lengthens the flame would involve the idea that the gas burns with a visible flame, which we know is not the case. This, to my mind, is sufficient proof that such a theory is wrong.

If my theory is correct; namely, that an observed lengthening of the flame of a safety lamp is caused by an increased velocity of the air supply, owing to a reduced pressure within the lamp, the inference is that a gas lighter than air is present and this is generally assumed to be methane, in mining practice. The result is, as I have known by personal experience, that the lengthening of the flame in a safety lamp has caused the report of the presence of firedamp when that was not the case.

In submitting this question to *Coal Age* and its readers, it is not my intention or desire to detract from the importance and significance of the indication of the lengthening of the flame of a safety lamp. The sole purpose is to get at the true explanation for the phenomenon. My theory may be entirely wrong, but, to my mind, it thoroughly explains the cause of the lengthening of the flame, which may be due to the presence of firedamp or otherwise. I shall be interested in learning how this theory is regarded by others.

I. C. PARFITT.

Washington, D. C.

The theory submitted by this correspondent is unique and ingenious; but, in our opinion, is not a satisfactory explanation of the lengthening of the flame of a safety lamp burning in a gas-charged atmosphere. In the mind of the editor, the idea advanced has no warrant to replace the generally accepted theory that a lamp flame, burning in gas-charged air, is lengthened by reason of its effort to reach the air required for complete combustion of the carbonaceous matter forming the body of the flame.

What our correspondent has said with reference to the invisibility of the gas flame proving that it (the gas flame) is not the cause of the observed lengthening of the lamp flame, appears to involve a misconception of the effect of a gas-charged atmosphere surrounding the lamp flame. It is not assumed,

for a moment, that the gas flame combines with the lamp flame to produce the observed lengthening of the latter.

The generally accepted reasoning is that the gas-charged air surrounds the lamp flame with an envelope of burning gas that is, of course, invisible. But as a result, there are two effects: First, the heat of the burning gas increases the temperature and expands the volume of the visible lamp flame. Second, the oxygen that would otherwise reach the lamp flame is partly consumed in the combustion of the gas surrounding it. The natural result of this is that

the incandescent carbons of the lamp flame travel further upward before finding oxygen sufficient for their combustion.

The same principle explains the tapering structure of all flame, as it reaches upward in the effort to find sufficient oxygen for the combustion of the carbonaceous material of the oil or other illuminant burned in the lamp. We shall be glad to have the question further discussed by those whose experience and training enable them to give a satisfactory explanation of the phenomenon.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—Explain the effect of barometric pressure, in mines giving off methane (CH_4).

ANSWER—A falling barometer indicates a decreasing atmospheric pressure. Any considerable decrease in atmospheric pressure means a corresponding expansion of the air contained in abandoned areas within the mine, owing to the relief of the pressure. As a result, air flows out from such abandoned places; and this outflow of air is very apt to be charged with poisonous gases, which are also frequently explosive, or become so when mixed with a larger volume of fresh air in the air current.

Therefore, a fall of barometric pressure is very apt to be accompanied with an increase in the explosive condition of the mine air. Extra precaution is required, at such times, in order to prevent disaster by reason of the ignition of the gas-charged air. The condition is much more dangerous in a dusty mine, where the presence of the dust floating in the air is an added menace to the situation.

QUESTION—What difference is there, if any, in the quantity of air passing through two splits from a main air-course, the first split having an opening 4x9 ft. and 4,000 ft. long, and the second split having an opening 6x6 ft. and 5,000 ft. long?

ANSWER—Assuming that the two splits are under equal pressure and the sectional area of each being 36 sq.ft., the quantity of air passing in each split will vary inversely as the square root of the rubbing surface, which in the first airway is $2(4+9)4,000 = 104,000$ sq.ft.; and in the second airway $2(6+6)5,000 = 120,000$ sq.ft. In other words, the quantity ratio, in the two splits, is equal to the square root of the inverse ratio of their rubbing surfaces, which gives

$$\frac{Q_1}{Q_2} = \sqrt{\frac{120,000}{104,000}} = \sqrt{1.1538} = 1.074$$

That is to say, the quantity passing in the first split will be 1.074 times that passing in the second, under the same pressure.

QUESTION—(a) How would you determine when the coal dust in a mine requires more moisture, in order to render it safe from explosion hazard? (b) Name two or more methods of applying moisture to coal dust in mines.

ANSWER—(a) To render coal dust immune and safe from explosion hazard, it should be sufficiently moistened to be plastic when compressed in the hand or molded, according to the recommendations of the Federal Bureau of mines.

(b) The means of applying moisture are numerous. Water cars have been used for watering the roads in small mines. Spraying the roads and travelingways, by installing a pipe system throughout the mine, is more efficient. At times, the pipes are perforated with small holes through which the water is sprayed. Again, short lengths of hose are used attaching them to plugs in the pipes. These are arranged at short intervals along the roads and travelingways.

Another system largely used is to humidify the mine air as it enters the mine, using steam for that purpose and raising the temperature of the air by passing it over steam coils, to enable it to take up more moisture. Much of this moisture is deposited in the workings as the air current traverses the mine. The distribution of salt in mine workings has been found very efficient for keeping the dust in a moist condition. A good plan is to mix the salt with the stemming used to tamp the holes in blasting.

QUESTION—What are the duties of a mine foreman when he arrives at the mine in the morning?

ANSWER—On his arrival at the mine in the morning, the first duty of the mine foreman is to assure himself that

the engineer, firemen and other top hands are in their places and that the ventilating apparatus is working properly. On entering the mine, he must examine and sign the fireboss' report and learn from him the general condition of the mine. The foreman should receive from the fireboss and hold the checks of men working in places where danger has been found. He must arrange to have these dangers removed and the places made safe, as quickly as possible. No one must be allowed to enter such places, however, until the places have been again examined and found safe for work. The foreman should then see that the work of hauling and hoisting coal is proceeding and arrange for any needed supplies of timber, rails and tracking so as to avoid unnecessary delay.

QUESTION—Compute the horsepower of an engine 18x36 in., with 110 lb. steam pressure.

ANSWER—The sectional area of the cylinder of this engine is $0.7854 \times 18^2 = 254.47$ sq.in. Operating under a gage pressure of 110 lb. per sq.in. and assuming a two-thirds cutoff, the mean effective steam pressure in the cylinder may be taken as 88 lb. per sq.in.; and the total pressure on the piston is, then, $88 \times 254.47 = 22,394$ lb. Again, assuming a piston speed of 600 ft. per min., the indicated horsepower of this engine is $(22,394 \times 600) \div 33,000 = 407$ hp.

QUESTION—What weight can be lifted by an 18x36 in. engine, operating under a gage pressure of 110 lb. per sq.in., the engine being direct connected to a 6-ft. drum?

ANSWER—Estimating the lifting power of the engine under the full steam pressure, gives for the force exerted on the piston $110(0.7854 \times 18^2) = 27,991.7$, say 28,000 lb. or 14 tons. This engine having a stroke of 36 in., the length of the crankshaft is 18 in., which is one-half the radius of the drum. Approximately, the moment of the steam pressure, acting at right angles to the crankshaft, is equal to the moment of the load acting on the radius of the drum. Therefore, the lifting power of the engine, in this case, is $(2 \times 18) \div 36 = 1$ ton.

QUESTION—In a mine giving off 2,250 cu.ft. of marsh gas per minute, the volume of air entering the mine being 70,000 cu.ft. per min., what is the percentage of gas in the air current at the outlet?

ANSWER—In answering this question, allowance should be made for the change in temperature and volume from the intake or entrance of the mine, where the air is measured, to the outlet where the air is discharged. However, assuming a constant temperature in this case, and ignoring the change of volume due to the release of the ventilating pressure at the outlet, the total volume of air and gas passing out of the mine is 72,250 cu.ft. per min. The percentage of gas in this current is then $(2,250 \times 100) \div 72,250 = 3.114$ per cent.

What Happened in the Coal Industry in 1922

(Continued from last week)

July (Continued)

July 17—Sheriff and five non-union men killed and many wounded in attack of 300 men on Richland Mining Co.'s Clifton Mine at Cliftonville, W. Va. (Vol. 22, No. 3, p. 105).

July 17—Coal shortage seems to have arrived. Average price climbs from \$3.64 to \$3.89 in a week. Western Kentucky jumps \$1 to \$6.25. Rail congestion increases. Northwest begins to take freight with stocks lowered by shipments back down the lake and by heavy demand (Vol. 22, No. 3, p. 107).

July 18—Many operators regret President called his futile conference just now for union was on point of surrender (Vol. 22, No. 4, p. 142).

July 18—President Harding wires Governor of 28 coal states to invite operators and miners to go back to work and to guarantee protection to those men willing to work. Governors of 26 states accept, but Gov. Ritchie of Maryland and Gov. Morrison of North Carolina decline (Vol. 22, No. 4, p. 139).

July 19—Campaign of frightfulness in West Virginia unearths by state officials. Dynamiting of train of miners in Boone county only one evidence of it (Vol. 22, No. 4, p. 144).

July 20—Eleven hundred Pennsylvania troops go on duty throughout Washington, Westmoreland, Somerset, Indiana and Cambria counties (Vol. 22, No. 4, p. 143).

July 20—Pittsburgh operators post "Washington" scale of 1917 to be in effect they say to Jan. 1, 1923. Few go back to work under it (Vol. 22, No. 4, p. 138).

July 20—President Harding replies to Governor Spraul of Pennsylvania that he "may expect selection of a commission...in due time" though its form must differ from that originally planned (Vol. 22, No. 4, p. 140).

July 22—Southwestern Interstate Association urges Lewis and district presidents in its field to enter into district wage negotiations at once in spite of refusals of miners on March 29 and April 10 (Vol. 22, No. 4, p. 140).

July 23—President Ogle of National Coal Association wires President Harding urging appointment of non-partisans fact-finding commission at once (Vol. 22, No. 4, p. 140).

July 24—Attorney-General Daugherty declares as legal the government's plan for distributing cars only to those operators who conform to Hoover fair prices (Vol. 22, No. 4, p. 141).

July 24—Government's tentative plan for price control and regulation of distribution calls for Presidential committee in Washington, and administrative committee of operators, railways, etc., to help carry out plan of distributing cars only to those who conform to Hoover prices and to help carry out I. C. C. preferential coal orders. Attorney-General says plan is legal. Operators go home to choose district committee to serve Presidential committee (Vol. 22, No. 4, p. 141).

July 24—Attorney-General Daugherty after investigation is "unable to say" whether relationship between coal and rail strikes is conspired or inspired (Vol. 22, No. 4, p. 143).

July 24—Operators of Southwestern Interstate District indorse Harding plan for resumption of mining (Vol. 22, No. 5, p. 182).

July 24—Coal prices roll upward jumping in a week from average of \$3.89 to \$5.56. Western Kentucky hops up \$1 a day to \$11@\$12. Majority of coal, however, stays at Hoover level. Rail paralysis largely responsible for sensational market rise (Vol. 22, No. 4, p. 145).

July 25—White House announces it has offered to miners and operators strike settlement plan containing guarantee of minimum wage and 280 days work annually to miners (Vol. 22, No. 4, p. 141).

July 25—Senator Borah introduces bill for commission of three at \$8,000 a year each to report on advisability of nationalizing mines (Vol. 22, No. 5, p. 180).

July 25—Biggest Kentucky mine merger in years unites Log Mountain and Yellow Creek Coal Co.'s with Hignite and Bennett Fork Coal Mining Co.'s and Mingo Coal and Coke Co. (Vol. 22, No. 5, p. 176).

July 26—I. C. C. issues first priority order Service Order 23, as follows: Cars to be supplied (1) for special purposes assigned by Commission, (2) public utilities, U. S. state and city governments, railroads, (3) lake traffic, (4) railroad domestic shipment, (5) all others (Vol. 22, No. 4, p. 141).

July 28—Joint arbitration board restores 1920 scale in Kentucky-Tennessee district (Vol. 22, No. 6, p. 223).

July 28—First organization of Connellsburg coal operators is formed as adjunct to government price control committee. It is the Fayette-Greene Coal Operators' Association (Vol. 22, No. 5, p. 179).

July 29—President Farrington of Illinois union district calls state convention to discuss state negotiations (Vol. 22, No. 5, p. 179).

July 29—President Harding induces Borah to stay action on the Senator's coal commission bill (Vol. 22, No. 5, p. 180).

July 29—Injunctions against unions issued by Judge McClintic in West Virginia are upheld by U. S. Circuit Court of Appeals at Richmond, Va. (Vol. 22, No. 5, p. 182).

July 29—Michigan miners refuse to heed Gov. Groesbeck's request that they go back to work (Vol. 22, No. 5, p. 182).

July 30—Generally agreed now that Hoover price agreement has broken down because some fields refuse to subscribe to it (Vol. 22, No. 6, p. 217).

July 30—President Farrington of Illinois miners calls off his state convention saying "too much publicity" killed it (Vol. 22, No. 5, p. 179).

July 31—Coal market reaches peak of 1922 with an average spot price of \$6.73 (Vol. 22, No. 5, p. 183).

August

Aug. 1—E. A. Holbrook, assistant director of U. S. Bureau of Mines, becomes dean of Pennsylvania State College school of mines (Vol. 22, No. 7, p. 254).

Aug. 1—Henry B. Spencer, administrative member of the President's committee on car distribution, opens Washington offices and begins work (Vol. 22, No. 5, p. 177).

Aug. 1—President Lewis of the miners invites operators of Central Competitive Field to Cleveland Conference Aug. 7. Says miners will not have to take wage cut and that mines will be working in a week or so (Vol. 22, No. 7, p. 257).

Aug. 3—Southern Ohio operators decline to attend Lewis' Cleveland conference on Aug. 7 (Vol. 22, No. 6, p. 219).

Aug. 4—Fuel Distributor Spencer organizes his operators committees in each district directed by Naval officer (Vol. 22, No. 6, p. 213).

Aug. 4—Illinois operators offer their miners last year's scale until March 31, 1923, if they will arbitrate new scale. Farrington says he cannot answer until Cleveland conference is over (Vol. 22, No. 6, p. 215).

Aug. 7—Cleveland conference called by Lewis draws small percentage of Central Competitive Field Tonnage. Adjoins quickly to give new "Crews-Glasgow plan" a chance to bring in more operators. Michael Gallagher of Northeastern Ohio is chairman (Vol. 22, No. 6, p. 220).

Aug. 8—Sections of the nation that feel coal shortage are beginning to appeal loudly to Distributor Spencer. Northwest is loudest of all (Vol. 22, No. 6, p. 217).

Aug. 9—Illinois operators send delegation to Toledo to meet special emissaries from Cleveland Conference. They agree on nothing (Vol. 22, No. 7, p. 255).

Aug. 10—Federal Fuel Committee agrees to see that Lakes shipping gets 250,000 tons of coal per week for Northwest (Vol. 22, No. 7, p. 253).

Aug. 11—Illinois operators in session for four days at Chicago finally decline to go to Cleveland because Lewis will not consider arbitration. They give out President Harding's letter endorsing their proposal that Illinois men resume old scale (Vol. 22, No. 7, p. 255).

Aug. 11—After four days of treadmilling in Cleveland conference miners elect all operators from outside Central Competitive Field and go on holding futile sessions (Vol. 22, No. 7, p. 257).

Aug. 12—Henry Ford's proposal to man Corbin (Ky.) shops of L. & N. with his men and open up the railroad "bottleneck" for coal traffic is rejected as "unthinkable" by President Maypother of L. & N. (Vol. 22, No. 7, p. 256).

Aug. 12—Operators and miners meet separately at Cleveland. Obviously something is wrong. Lewis and Gallagher issue joint statement saying the conference "is in no sense a four-state" one (Vol. 22, No. 7, p. 258).

Aug. 14—Comparative peace prevails in National Coal Assn. meeting in New York though President Ogle is criticized for dabbling in labor problems as head of the association (Vol. 22, No. 7, p. 260).

Aug. 14—Cleveland conference takes sudden new turn. T. H. Watkins of Central Pennsylvania is admitted with modified crews. Glasgow plan and Gallagher and S. H. Robbins withdraw (Vol. 22, No. 7, p. 257).

Aug. 15—Coal strike is broken, when Lewis in Cleveland conference signs up individually or by groups about 40,000,000 tons represented. Agreement provides for fall conferences on future methods of negotiations. Many regions decline to sign (Vol. 22, No. 7, p. 257).

Aug. 15—Most Nova Scotia mines closed by strike of miners who refuse to accept settlement made by their officers (Vol. 22, No. 7, p. 259).

Aug. 15—Second week in August sees only 147,000 tons of coal go into Lake carriers instead of 250,000. Hoover says "it is impracticable to continue price control on a voluntary basis" and said it could only be done by law (Vol. 22, No. 7, p. 260).

Aug. 16—Many West Virginia non-union fields advance pay to levels high enough to keep labor from leaving for union mines (Vol. 22, No. 10, p. 370).

Aug. 17—Anthracite operators and miners at request of President Harding begin negotiations at New York but get nowhere in a week because miners insist upon two-year contract (Vol. 22, No. 9, p. 331).

Aug. 17—First break among northern West Virginia operators comes when Consolidation Coal Co. and 50 others sign Cleveland agreement (Vol. 22, No. 8, p. 298).

Aug. 18—President Harding in message to Congress asking fuel distribution power says of Cleveland strike settlement: "The simple and significant truth was revealed that except for such coal as comes from the non-union districts, the country is at the mercy of the United Mine Workers." (Vol. 22, No. 7, p. 273).

Aug. 18—I.C.C. cancels wartime assigned car rule (Vol. 22, No. 8, p. 296).

Aug. 20—Nova Scotian miners' district ousts President Robt. Baxter and elects Dan Livingstone. Baxter was charged with "selling out" union in agreement membership repudiated (Vol. 22, No. 10, p. 368).

Aug. 21—Hoover prices in West Virginia, Kentucky and Tennessee are raised from \$3.50 to \$4.50. Hoover in message to Gov. Davis of Ohio foresees government price control over

union mines as they reopen (Vol. 22, No. 8, p. 292).

Aug. 22—Illinois signs agreement with miners after five days of conference. Terms are those of Cleveland except operators do not agree to take part in Lewis conferences on wage making machinery (Vol. 22, No. 8, p. 297).

Aug. 22—Borah and Winslow bills in Senate and House are reported. Each provides a form of government fact-finding commission (Vol. 22, No. 8, p. 295).

Aug. 22—Indiana operators sign but do not "endorse" Cleveland agreement (Vol. 22, No. 8, p. 298).

Aug. 23—Strictly union part of Central Pennsylvania field sign same contract that Pennsylvania Coal & Coke Co. and Clearfield Coal Corp. signed at Cleveland Aug. 15 (Vol. 22, No. 9, p. 332).

Aug. 23—Connellsville coke region and New River region raise wages to 1920 level to hold labor from going back to union mines (Vol. 22, No. 9, p. 332).

Aug. 23—Southwest signs Cleveland agreement (Vol. 22, No. 9, p. 336).

Aug. 24—Operators in British Columbia and Alberta sign agreement on scale 15 per cent under that of 1921 to resume work Aug. 28 (Vol. 22, No. 9, p. 332).

Aug. 24—Senator Cummins and Rep. Winslow file bills for price control through distribution of cars. Secretary Hoover favors Winslow bill (Vol. 22, No. 9, p. 335).

Aug. 25—British Empire Steel Corp. in Nova Scotia finally settles strike by raising pay 60 cents to \$3.25 a day and contract rates 12½ per cent (Vol. 22, No. 10, p. 368).

Aug. 26—About 150 operators of northern West Virginia have ratified Cleveland pact to date (Vol. 22, No. 10, p. 372).

Aug. 27—Francis S. Peabody, operator, dies suddenly at home near Chicago (Vol. 22, No. 9, p. 336).

Aug. 28—Pocahontas field raises scale to 1920 level effective Aug. 15 (Vol. 22, No. 10, p. 370).

Aug. 28—Grand Jury on Herrin case convenes (Vol. 22, No. 9, p. 334).

Aug. 28-29—Special session of New York Legislature passes bill creating office of fuel administrator and giving state certain price control. The act creates revolving fund of ten million dollars for state to buy fuel and sell it to the people (Vol. 22, No. 9, p. 336).

Aug. 29—Anthracite miners and operators resume conference this time at Washington (Vol. 22, No. 10, p. 373).

Aug. 29—I.C.C. amends service order 23 to put Lake coal into Class 1 in priority list (Vol. 22, No. 10, p. 370).

Aug. 29—Pittsburgh Coal Producers' Assn. minus the Pittsburgh Coal Co. signs Cleveland agreement (Vol. 22, No. 10, p. 368).

Aug. 30—Pittsburgh Coal Co. last to succumb, signs Cleveland agreement (Vol. 22, No. 10, p. 368).

Aug. 30—Herrin grand jury indicts Otis Clark, mine union official, and he is arrested as first prisoner in massacre case (Vol. 22, No. 10, p. 372).

Aug. 30—Explosion in No. 4 mine of Canadian Collieries Co. at Cumberland, B. C., kills 15, of whom 12 are orientals, and injures 16. Cause is unknown (Vol. 22, No. 10, p. 369).

Aug. 31—Anthracite operators say they will sign on miners' terms but only to Sept. 1, 1923, if they get "mandate from the public" (Vol. 22, No. 10, p. 373).

Aug. 31—House passes, 214 to 61, Winslow bill to control coal prices by car control and to aid in coal distribution (Vol. 22, No. 10, p. 370).

September

Sept. 1—Illinois operators' trade associations dissolve and private statistical organizations take their places (Vol. 22, No. 13, p. 504).

Sept. 1—U. S. Steel Corporation advances wages 20 per cent (Vol. 22, No. 9, p. 336).

Sept. 1—Alabama increases wages 20 per cent (Vol. 22, No. 9, p. 332).

Sept. 1—Western Kentucky signs new agreement to run to April, 1923. They worked through the summer on a non-strike agreement with the union (Vol. 22, No. 10, p. 369).

Sept. 2—Anthracite miners and operators in Philadelphia again make tentative agreement to be ratified by miners (Vol. 22, No. 10, p. 373).

Sept. 7—Coronado Coal Co. et al. petition U. S. Supreme Court for rehearing on Coronado case (Vol. 22, No. 11, p. 418).

Sept. 7—Senate passes Cummins price control bill, 40 to 7 (Vol. 22, No. 11, p. 421).

Sept. 7—Herrin grand jury indicts 37 more for June 22 massacre (Vol. 22, No. 11, p. 423).

Sept. 8—Herrin grand jury adds 21 more indictments to its list (Vol. 22, No. 11, p. 423).

Sept. 8—Senate passes Borah fact-finding commission bill, without a roll call (Vol. 22, No. 11, p. 421).

Sept. 8—New York State Coal Merchants' Assn. recedes from previous position and votes to support government price control program (Vol. 22, No. 11, p. 422).

Sept. 11—Anthracite mines resume work. Operators and miners sign at noon in Scranton, contract at "war wages" running to Sept. 1, 1923 (Vol. 22, No. 11, p. 425).

Sept. 13—Ohio legislature in special session passes drastic coal act creating fuel administrator office with much price power. State is empowered to seize mines if necessary (Vol. 22, No. 12, p. 460).

Sept. 15—Secretary Hoover holds important conference with leading commercial interests on coal distribution to get co-operation on coming government distribution control (Vol. 22, No. 12, p. 467).

Sept. 15—National Assn. of Purchasing Agents adopts policy of co-operating with Hoover (Vol. 22, No. 14, p. 555).

Sept. 15—C. J. Neal is named fuel administrator for Ohio (Vol. 22, No. 13, p. 507).

Sept. 16—Winslow price control bill passes Senate and goes to President Harding for signature (Vol. 22, No. 12, p. 461).

Sept. 16—"Guilty of treason" is jury's finding at Charlestown, W. Va., against Walter Allen, accused of being one of the marchers on the non-union coal fields of Logan and Mingo counties in September, 1921 (Vol. 22, No. 12, p. 466).

Sept. 19—I.C.C. amends S. O. 23 and 24 with S. O. 25 shifting its policy from priorities on coal cars to a broader priority on coal transportation (Vol. 22, No. 13, p. 507).

Sept. 20—Col. L. E. Tierney, officer in Crozer, Pocahontas, Powhatan Coal & Coke, and other companies, dies at home in Powhatan, W. Va. (Vol. 22, No. 13, p. 507).

Sept. 21—John G. Smith, general manager for the Consolidation Coal Co. at Jenkins, Ky., is killed by fall of slate (Vol. 22, No. 13, p. 510).

Sept. 22—Fact-finding commission bill, a compromise in committee, passes and is enacted into law (Vol. 22, No. 13, p. 503).

Sept. 22—President Harding signs coal distribution bill and appoints Conrad E. Spens fuel distributor (Vol. 22, No. 13, p. 505).

Sept. 23—Herrin grand jury brings in enough more indictments to make total 214 and makes fearless report on massacre of June 22. Attorney for union declares the case is "persecution of labor by capital" (Vol. 22, No. 13, p. 509).

Sept. 27—Fuel Distributor Spens orders daily reports on kind, amount, and price of soft coal shipped and to whom sent. Business men's committee named to assist Spens (Vol. 22, No. 14, p. 558).

Sept. 28—Injunction against union interference at mines of Bethlehem Mines Corporation is made permanent by Judge Langham (Vol. 22, No. 14, p. 555).

Sept. 30—Mine union wins a point in Herrin defense by getting trial of 8 men charged with murder of Howard Hoff-

man ordered first. State wanted to prosecute Otis Clark, union official, first (Vol. 22, No. 14, p. 556).

October

Oct. 1—Lake sailors strike but most coal vessels manage to move anyway (Vol. 22, No. 15, p. 602).

Oct. 1—J. D. Morrow, secretary, and John Callahan, traffic manager, of the National Coal Assn. resign to open jobbing business (Vol. 22, No. 15, p. 601).

Oct. 1—Western Fuel Corp. of Canada signs 2-year contract with men. Minimum wage is \$4.25 (Vol. 22, No. 14, p. 560).

Oct. 1—Pennsylvania Fair Practice committee is created with Edgar F. Felton as chairman to help control anthracite prices (Vol. 22, No. 14, p. 561).

Oct. 1—U. S. 1921 total bituminous output was 415,921,000 tons, U. S. Geological Survey announces (Vol. 22, No. 14, p. 553).

Oct. 2—H. M. Sipe, of Clarksburg, W. Va., sues union for \$50,000 for refusing to sign contract for a mine taken over from Hudson Coal Co., an open shop organization (Vol. 22, No. 16, p. 658).

Oct. 2—Practically every bituminous union district represented at Cleveland miner-operator conference. T. F. Maher is made temporary chairman. Conference adjourns until next day and operators wrangle all afternoon (Vol. 22, No. 14, p. 559).

Oct. 3—Cleveland conference hears pacific speech by John Lewis advising both sides to "bury the hatchet." Operators give up plan of sending separate list of names for fact-finding commission to Washington. Miners give up plan for joint fact-finding commission (Vol. 22, No. 14, p. 559).

Oct. 4—Cleveland conference winds up peacefully. Appoints "reorganization" committee of two miners and two operators from each district to meet Nov. 14 and try to work out future method of negotiation. Miners send 10 names of suggested "fact-finders" to Washington (Vol. 22, No. 15, p. 597).

Oct. 4—Immediately after the "peace conference" in Cleveland miners announce they will demand continuance of existing scale after April 1, 1923, together with all the Indianapolis demands written at union convention (Vol. 22, No. 15, p. 599).

Oct. 4—Fuel Distributor Spens simplifies his order No. 1 so that consignees and car numbers are omitted from daily reports from shippers (Vol. 22, No. 15, p. 599).

Oct. 7—Martial law in Mingo County, W. Va., raised after 15 months following Logan County "march" and attack by union army of 6,000 (Vol. 22, No. 16, p. 640).

Oct. 9—U. S. Supreme Court denies petition for rehearing of Coronado Coal Co. case (Vol. 22, No. 16, p. 646).

Oct. 9—For murder of Sheriff Duvall and five others at Cliftonville mine July 17, 218 union miners go on trial charged with murder, etc. (Vol. 22, No. 16, p. 640).

Oct. 9-14—American Mining Congress at Cleveland discusses various phases of coal in annual convention and exposition (Vol. 22, No. 15, p. 603).

Oct. 10—President appoints to Federal Coal Commission John Hays Hammond, chairman, Thomas Riley Marshall, Clark Howell, Dr. Edward T. Devine, Judge Samuel Alscher, Charles P. Neill and George Otis Smith (Vol. 22, No. 16, p. 619).

Oct. 10—Ohio's maximum price list goes into effect fixing prices at \$3.56 to \$4.86 at mines (Vol. 22, No. 15, p. 601).

Oct. 10—Michigan legislature convenes in special session to consider Gov. Groesbeck's plan of price control. Senate excludes wood and oil and cuts off appropriation for administrator (Vol. 22, No. 16, p. 645).

Oct. 14—Smokeless maximum price of \$6 a ton agreed to by 80 per cent of operators. Fuel Distributor Spens says (Vol. 22, No. 16, p. 643).

Oct. 15—Consolidation of Indiana Bituminous Coal Operators Assn. and Indiana Coal Producers' Assn. of strip miners effected (Vol. 22, No. 16, p. 657).

Oct. 16—Fuel Administrator's organization begins investigating independent anthracite operators selling above \$9.25 (Vol. 22, No. 16, p. 643).

Oct. 18—Federal Coal Commission organizes and decides to invite John Lewis, Alfred Ogle of the National Coal Assn., and S. D. Warriner, a leading anthracite operator, to name advisory committees to aid the commission (Vol. 22, No. 17, p. 681).

Oct. 23—Herrin grand jury completes its work by indicting 48 more men for murder at Lester strip mine June 22 (Vol. 22, No. 17, p. 686).

Oct. 27—Union officially calls off strike in Mingo County, W. Va., and moves many tented miners to union fields. In 28 months of this strike 30 men have been killed, 50 wounded, much property destroyed by fire and dynamite and the effort cost union \$2,000,000 (Vol. 22, No. 18, p. 727).

November

Nov. 1—Stocks on hand Sept. 1 were 22,000,000 tons and 28,000,000 tons on Oct. 1 in the hands of commercial consumers, Geological Survey announces (Vol. 22, No. 19, p. 765).

Nov. 2—Northern West Virginia agrees with Fuel Distributor Spens to reduce domestic sizes from \$5.50@\$5.75 to a maximum of \$4.50 (Vol. 22, No. 19, p. 767).

Nov. 4—Railroads offer complete cooperation with Federal Coal Commission (Vol. 22, No. 21, p. 846).

Nov. 5—Citizens of Olyphant, Pa., seize two cars of anthracite belonging to Hudson Coal Co., and use it for schools, claiming Temple Fuel Co. would not fill schools' order. Company protests in vain to state (Vol. 22, No. 21, p. 861).

Nov. 6—Illinois and Indiana producers decline to reduce domestic lump from \$5.50 to Hoover level of \$4 suggested by Fuel Distributor Spens (Vol. 22, No. 19, p. 767).

Nov. 6—Explosion in Reilly mine at Spangler, Pa., entombs 95 miners (Vol. 22, No. 19, p. 767).

Nov. 10—Kentucky guardsmen are removed from Hopkins County (Vol. 22, No. 21, p. 859).

Nov. 13—Coal shortage in the South causes Fuel Administration to order railroads to supply L. & N. with 4,000 cars at once. Governors of six southern states consider relief methods in Nov. 15 conference (Vol. 22, No. 21, p. 844).

Nov. 13-14—Kohler mine-cave law is attacked before Supreme Court by northeast states' attorneys-general and others, including John W. Davis, former ambassador to England. Main contention is that the law is unconstitutional (Vol. 22, No. 21, p. 846).

Nov. 14-16—Sub-committee of two operators and two miners from each of 15 districts fail in Chicago to agree upon any method of future negotiations. Adjourning to Dec. 6 giving indications that

eventually the four-state plan would be re-established. Outlying districts led by Harry N. Taylor of Kansas City and C. H. Jenkins, of Fairmont, proposed plans for national negotiations without success (Vol. 22, No. 21, p. 843-4).

Nov. 15—Strike settlement in San Juan valley of Colorado is finally made, miners to get 1921 scale (Vol. 22, No. 21, p. 859).

Nov. 18—Anthracite operators submit suggestions to U. S. Coal Commission pledging co-operation in collecting data (Vol. 22, No. 21, p. 845-6).

Nov. 20—Retail margins on coal in Ohio are increased an average of 25 cents a ton in cities and 8 cents in towns (Vol. 22, No. 21, p. 846).

Nov. 22—Jury finds Spangler explosion was due to too few fireboxes, use of open lights, and bad ventilation (Vol. 22, No. 22, p. 888).

Nov. 22—Runaway trip at Dolomite mine, Dolomite, Ala., causes terrific dust explosion, killing 86 and injuring 59 besides damaging stope and bottom and burning wood parts of tipple (Vol. 22, No. 21, p. 877).

Nov. 24—Illinois operators instruct their two men on national sub-committee on wage negotiating methods to favor four-state or district plans at Dec. 6 meeting of the sub-committee (Vol. 22, No. 22, p. 890).

Nov. 24—Miners will not accept any wage cut next spring, Ellis Seares, publicist for U. M. W. of A., tells Business Science Club of Philadelphia (Vol. 22, No. 22, p. 869).

Nov. 25—I.C.C. seems impressed with bulk of evidence submitted to it against assigned car practice for Service Order 26 says such cars "shall be counted against the distributive share allotted to the mines" (Vol. 22, No. 22, p. 886).

Nov. 26—First dynamiting in Connellsville region wrecks two-family house and hurts two men (Vol. 22, No. 23, p. 925).

Nov. 27—U. S. Supreme Court holds Pennsylvania anthracite tax law constitutional (Vol. 22, No. 22, p. 888).

Nov. 28—Both American Mining Congress, Western Pennsylvania coal operators and American Railway Assn. organize special committees to aid federal coal commission (Vol. 22, No. 23, p. 927).

December

Dec. 1—Ohio fuel administration disbands because "The emergency is over" (Vol. 22, No. 23, p. 928).

Dec. 1—John D. Battle becomes traffic manager of the National Coal Assn. (Vol. 22, No. 21, p. 848).

Dec. 4—Indiana operators refuse to check off \$4 special assessment for national union (Vol. 22, No. 24, p. 968).

Dec. 5—American Wholesale Coal Assn. men tell the S. Coal Commission of the valuable service the wholesaler renders the industry (Vol. 22, No. 24, p. 966).

Dec. 6—Miners in "reorganization" committees' final session in Chicago re-

ject plan operators had worked out Dec. 4 and 5 for separate district agreements, so the committee's efforts to devise method for future wage negotiation end in failure (Vol. 22, No. 24, p. 963).

Dec. 8—Illinois operators in 5th and 9th districts agree not to sell domestic coal for more than \$4.50, Federal Fuel Distributor Spens announces (Vol. 22, No. 24, p. 965).

Dec. 9—John Hessler, Indiana union president, serves notice of strike if \$4 assessment for national union is not checked off (Vol. 22, No. 24, p. 968).

Dec. 10—Bituminous coal industry is overdeveloped 30 to 60 per cent, U. S. Coal Commission's studies indicate, according to informal statement (Vol. 22, No. 24, p. 966).

Dec. 11—I.C.C. rescind open top car restrictions and priorities (Vol. 22, No. 24, p. 968).

Dec. 11—U. S. Supreme Court decides Kohler Act—known as "the cave-in law"—is unconstitutional. This act forbade mining under habitations (Vol. 22, No. 24, p. 968).

Dec. 11—I.C.C. dismisses complaints of Bell & Zoller Coal Co. vs. B. & O. Railroad of irregularity in car distribution, deciding against joint mines and limiting car supply to 100 per cent (Vol. 22, No. 25, p. 1005).

Dec. 11—John Hays Hammond tells newspaper men U. S. Coal Commission has no intention of arbitrating the bituminous wage dispute (Vol. 22, No. 24, p. 967).

Dec. 11—Subpenas are issued by U. S. Coal Commission for retail coal dealers to tell of anthracite prices (Vol. 22, No. 24, p. 967).

Dec. 13—United Mine Workers urge U. S. Coal Commission to probe Logan County, W. Va., conditions where the union claims oppression is being visited on unions (Vol. 22, No. 25, p. 1007).

Dec. 13—Indiana operators surrender to union and agree, to check off \$4 special assessment for the national union organization (Vol. 22, No. 25, p. 1006).

Dec. 13-15—Coal Mining Institute of America meets at Pittsburgh, Pa. (Vol. 22, No. 25, p. 997).

Dec. 14—Smokeless Operators' Assn. elects R. H. Gross of Boston its president (Vol. 22, No. 25, p. 1004).

Dec. 15—Frank Farrington is announced re-elected to presidency of Illinois miners' union (Vol. 22, No. 25, p. 1009).

Dec. 16—Witnesses during week in Herrin massacre identify all five prisoners on trial for Howard Hoffman's murder June 22 (Vol. 22, No. 25, p. 1004).

Dec. 20—I.C.C. makes tentative report favoring much revision and equalizing of freight rates from coal fields of Rocky Mountain states (Vol. 22, No. 26, p. 1049).

Dec. 26—Falling market is bolstered, as year closes, by railroad incapacity to handle coal traffic and bituminous average price rises in a week from \$4.07 to \$4.23 (Vol. 22, No. 26, p. 1051).

Average Spot Prices of Bituminous Coal, F.o.b. Mines

Month	(Unit net ton of 2,000 lb.)												Spot Prices July, 1913—June, 1914, As Base												
	\$1.46	\$1.21	\$1.13	\$1.53	\$4.15	\$2.48	\$2.57	\$2.57	\$3.26	\$2.26	120	100	93	126	343	205	213	212	270	187	182	229	175	217	186
Jan.	1.22	1.16	1.12	1.40	4.18	2.53	2.49	2.58	2.77	2.20	101	96	92	116	346	209	206	213	229	182	182	229	175	217	186
Feb.	1.17	1.17	1.09	1.27	3.89	2.58	2.47	2.58	2.63	2.12	97	96	90	105	321	214	204	213	217	175	182	229	175	217	186
March	1.17	1.16	1.08	1.24	3.21	2.64	2.43	3.85	2.62	2.25	97	96	89	103	265	218	200	318	217	186	182	229	175	217	186
April	1.17	1.16	1.08	1.24	3.21	2.64	2.43	3.85	2.62	2.25	97	96	89	100	342	221	197	379	222	257	182	229	175	217	186
May	1.15	1.16	1.07	1.21	4.14	2.67	2.38	4.59	2.68	3.11	95	96	89	100	342	221	197	379	222	257	182	229	175	217	186
June	1.14	1.12	1.07	1.26	4.00	2.57	2.40	7.18	2.52	3.31	95	93	88	104	331	212	198	593	208	274	182	229	175	217	186
July	1.18	1.12	1.05	1.22	3.17	2.58	2.47	8.24	2.40	4.67	97	93	87	101	262	213	204	681	198	386	182	229	175	217	186
August	1.22	1.13	1.07	1.30	3.24	2.58	2.76	9.51	2.42	6.13	100	93	88	107	268	213	228	786	200	507	182	229	175	217	186
Sept.	1.23	1.11	1.10	1.57	2.02	2.58	2.91	8.52	2.37	5.07	102	92	91	130	167	213	241	704	196	419	182	229	175	217	186
Oct.	1.29	1.13	1.12	2.26	2.02	2.58	3.09	7.78	2.33	4.48	106	93	93	187	167	213	256	143	193	370	182	229	175	217	186
Nov.	1.31	1.10	1.17	3.87	2.48	2.58	2.57	5.87	2.35	4.11	108	91	97	320	205	213	212	465	194	330	182	229	175	217	186
Dec.	1.26	1.11	1.33	4.01	2.48	2.58	2.58	4.38	2.26	4.04	104	92	100	332	205	213	213	362	187	334	182	229	175	217	186
1st Quarter	1.28	1.18	1.11	1.40	4.07	2.53	2.51	2.58	2.89	2.19	106	97	92	116	337	209	208	213	239	181	182	229	175	217	186
2nd Quarter	1.15	1.15	1.07	1.24	3.78	2.63	2.40	5.20	2.61	2.89	96	95	89	102	313	217	198	430	216	239	182	229	175	217	186
3rd Quarter	1.21	1.12	1.07	1.36	2.81	2.58	2.71	8.76	2.40	5.29	100	93	89	113	232	213	224	723	198	437	182	229	175	217	186
4th Quarter	1.29	1.11	1.21	3.38	2.33	2.58	2.74	6.01	2.31	4.21	106	92	97	280	192	213	227	497	191	348	182	229	175	217	186
Yearly average	1.23	1.14	1.12	1.85	3.25	2.58	2.59	5.64	2.55	3.64	102	94	91	152	269	213	214	466	211	301	182	229	175	217	186

Coal Age Index

Many Strikes Curtail Output of Canadian Mines

Production in 1922 Falls Behind Two Preceding Years—Besides Great Strike There Were Eleven Smaller Ones—Imports from Great Britain for the First Time in Years—874,000 Tons Received

By S. J. Cook*

THE output from Canadian mines during 1922 was approximately 14,210,000 tons, as compared with 15,057,493 tons in 1921, 16,946,764 tons in 1920 and 13,919,096 tons in 1919. The great strike which tied up the United States coal mines for several months was reflected in Canada and resulted in a loss of 1,199,427 working days. Eleven disputes between employees and employers occurred in Canada during the eleven months ending November, nine of which were in Alberta and south-

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eastern British Columbia and the other two in Nova Scotia.

In all, 23,901 men were affected, and of the time lost, 931,960 days were lost in the strike which began on April 1, and 260,034 days' time was lost in the short strikes originating in August. Alberta's output amounted to 5,387,000 tons, a little more than half of which was lignite. Nova Scotia contributed 5,349,000 tons and occupied second place among the coal-producing provinces. British Columbia accounted for 2,936,000 tons, and New Brunswick and Saskatchewan followed with 287,000 tons and 250,000 tons respectively.

Exports of Canadian coal were 1,821,000 tons in 1922, about 1,000,000 tons from the Western provinces and the balance from the maritime provinces, a decrease of about 160,000 tons from 1921. The exports during 1920 were 2,538,000 tons, and in 1919 amounted to about 2,000,000 tons.

For the first time in many years quantities of coal were imported from Great Britain. In all, about 874,000 tons was received, 710,000 tons of which was bituminous and 164,000 tons of which was entered as anthracite. The receipts at customs ports in Quebec of this coal from Great Britain amounted

COAL MADE AVAILABLE FOR CONSUMPTION IN CANADA IN 1922 BY PROVINCES IN NET TONS

Provinces	Canadian Coal				Imported United States	from Great Britain	Coal Available for Consumption
	Output	Received from Other Provinces	Shipped to Other Provinces	Exported			
<i>Nova Scotia</i>							
Anthracite.	5,348,830	61	1,981,384	623,416	23,642	3,965	27,607
Bituminous.					6,233	3,267	2,753,591
Totals.	5,348,830	61	1,981,384	623,416	29,875	7,232	2,781,198
<i>New Brunswick</i>							
Anthracite.	288,656	359,232	63,180	63,901	43,444	22,144	65,588
Bituminous.					61,501	25,268	607,576
Totals.	288,656	359,232	63,180	63,901	104,945	47,412	673,164
<i>Prince Edward Island</i>							
Anthracite.					5,989		5,989
Bituminous.		80,422			1,355		81,777
Totals.		80,422			7,344		87,766
<i>Quebec</i>							
Anthracite.					835,290	137,109	972,399
Bituminous.		1,594,458		56,403	1,264,570	674,593	3,477,185
Totals.		1,594,458		56,403	2,099,860	811,702	4,449,584
<i>Central Ontario</i>							
Anthracite.					1,715,071	900	1,715,971
Bituminous.		10,424			8,115,536	6,929	8,132,889
Totals.		10,424			9,830,607	7,829	9,848,860
<i>Head of Lakes</i>							
Anthracite.					43,816		43,816
Bituminous.		635		75	1,722,836		1,723,396
Lignite.		19,333					19,333
Totals.		19,968		75	1,766,652		1,786,545
<i>Manitoba and Head of Lakes</i>							
Anthracite.		10			15,223		15,233
Bituminous.		141,409		2,079	70,174		209,504
Lignite.		440,254					440,254
Totals.		581,673		2,079	85,397		664,991
<i>Manitoba and Head of Lakes</i>							
Anthracite.		10			59,039		59,049
Bituminous.		142,044		2,154	1,793,010		1,932,900
Lignite.		459,587					459,587
Totals.		601,641		2,154	1,852,049		2,451,536
<i>Saskatchewan</i>							
Anthracite.		796			231		1,027
Bituminous.		198,282		5,167	1,404		194,519
Lignite.		249,559	1,068,330	97,221			1,220,668
Totals.		249,559	1,267,408	97,221	5,167	1,635	1,416,214
<i>Alberta</i>							
Anthracite.	41,423		2,034				39,389
Bituminous.	2,511,759	15,918	313,303	821	1,130		2,214,683
Lignite.	2,834,077	1,064	1,513,654				1,321,487
Totals.	5,387,259	16,982	1,828,991	821	1,130		3,575,559
<i>British Columbia and Yukon</i>							
Anthracite.		1,228			35		1,263
Bituminous.		41,978	84,919	1,069,435	9,899		1,833,102
Lignite.		81,861					81,861
Totals.		2,935,579	125,067	84,919	1,069,435	9,934	1,916,226
<i>Canada</i>							
Anthracite.		41,423			2,682,741	164,118	2,888,282
Bituminous.		11,084,824			11,254,638	710,057	21,228,222
Lignite.		3,083,636					3,083,*16
Totals.		14,209,883			1,821,277	13,937,379	27,200,140

to 812,000 tons during the year, while New Brunswick received 47,000 tons and the balance was equally divided between Ontario and Nova Scotia. Imports of coal from the United States amounted in all to 13,937,000 tons, comprising 11,255,000 tons of bituminous coal and 2,683,000 tons of anthracite. As compared with the records for the preceding year, imports of bituminous coal were 2,300,000 tons lower, and imports of anthracite were 1,885,000 tons less.

For the whole of Canada the apparent consumption, or more properly, the coal made available for consumption in 1922

amounted to 27,200,000 tons, including 21,228,000 tons of bituminous coal, 3,083,000 tons of lignite and 2,888,000 tons of anthracite. The principal coal-consuming province was central Ontario, in which 9,849,000 tons was made available, including 1,716,000 tons of anthracite. In 1921 the same area was supplied with 11,543,000 tons and in 1920 with 13,331,000 tons. For Quebec 4,450,000 tons of coal was made available in 1922, as compared with 4,898,000 tons in 1921 and 5,327,000 tons in 1920.

In 1920 Canada produced 16,900,000 tons, exported 2,500,000 tons, imported

20,800,000 tons, and thus apparently consumed 35,200,000 tons. In 1921, when the output was 15,000,000 tons, the quantity exported amounted to 1,900,000 tons, imports to 18,100,000 tons, and the apparent consumption was 31,100,000 tons. The decline in the consumption of coal in 1921 was in conformity with the prevalent depression in the industrial world. For 1922 the output was 14,200,000 tons, the exports 1,800,000 tons, the imports 13,900,000 tons from the United States and 800,000 tons from Great Britain. The decrease in every item was due to strikes.

U. M. W. Committee Says District 26 Must Withdraw from Red International

By adopting a report of a committee appointed to investigate, the United Mine Workers of America has taken a positive stand against the Red International of Moscow and its attempt to "destroy the American legitimate labor movement and substitute therefor the principles of Bolshevism."

The investigation was made as the result of an inquiry by the district organization of the union in Nova Scotia, otherwise known as District No. 26, as to the right of that district to effect an affiliation with the International of Moscow.

The report of the committee states that the Red International is an organization similar in character to the "One Big Union," which existed in the northwestern provinces of Canada in 1918. Its program and policies are so shaped that it not only sanctions but in fact urges the workers to street uprisings, mob demonstrations, violence, or any other method that it may deem expedient for the accomplishment of its purpose.

Dealing with the question of collective bargaining the committee quotes section 54 of the Red International program and then says:

"It must be apparent to all who read and think that this program is in contravention to the policies, customs, practices and laws of the United Mine Workers of America. The membership of our great organization not only believe in the principle of collective bargaining but also the sanctity of contracts honorably entered into between the representatives of the United Mine Workers of America and the coal operators. In fact this is the rock upon which our union was founded, and in the practice of this policy we have not only made substantial gains in members but we have also strengthened our organization in power and influence."

After stating that the constitution of the United Mine Workers of America excludes from its membership roll and also provides other penalties for those members holding membership in a dual organization not affiliated with the American Federation of Labor, the report states that the Red International is, in the estimation of the American Federation of Labor, a dual organization.

"Therefore," continues the report, "in accordance with the provisions of Sec. 2, Art. 14, those of our members holding membership in the Red International will be required to pay the penalty provided in this section, which reads as follows:

Mine managers, top foremen, operators' commissioners, persons engaged in the sale of intoxicating liquors and members of the Civic Federation shall not be eligible for membership.

Any member accepting membership in the Industrial Workers of the World, the Working Class Union, the One Big Union, or any other dual organization not affiliated with the American Federation of Labor, or membership in the National Chamber of Commerce, or the Ku Klux Klan, shall be expelled from the United Mine Workers of America, and is permanently debarred from holding office in the United Mine Workers of America, and no members of any such organization shall be permitted to have membership in our union unless they forfeit their membership in the dual organization immediately upon securing membership in the United Mine Workers of America. Any member of the United Mine Workers of America who accepts office in any dual organization shall be permanently expelled from the United Mine Workers of America, unless reinstated by the International Executive Board."

The committee expresses regret that anywhere working people can be found so woefully deficient in the knowledge

of trade unionism that they will blindly follow the false teaching of the propagators of such movements. It recommends that District No. 26 be required to withdraw its application for affiliation with the Red International, and in the event of refusal, that it be suspended, the International organization assuming control of the district affairs.

I. C. C. Issues Service Orders 36 and 37

Because the Government Fuel Yards, Washington, D. C., have been receiving an inadequate supply of coal the Interstate Commerce Commission on Jan. 17 issued Service Order No. 36, effective Jan. 18, directing the assignment of coal cars for consignment to the government yards as follows: Four cars per day for ten consecutive working days by the Pennsylvania R.R. to the Hagevo Mine of the Emerson & Morgan Coal Mining Corporation, Hagevo, Pa., and to the Hughes No. 2 Mine of C. A. Hughes & Co., Cassandra, Pa.; two cars per day for ten consecutive working days by the Pennsylvania R.R. to Pennsylvania Mine No. 1 of the Pennsylvania Coal & Coke Corporation, Portage, Pa., and to Commercial Mine No. 5 of the Commercial Coal Mining Co., Twin Rocks, Pa.; two cars per day for ten consecutive working days by the Johnstown & Stony Creek R.R. and the B. & O. to Thermal No. 4 Mine of the Moxham Coal Co., Johnstown, Pa.; one car per day for ten consecutive working days by the Pennsylvania R.R. to Pennsylvania Mine No. 15 of the Pennsylvania Coal & Coke Corporation, Beaverdale, Pa., and by the B. & O. to the Helen Mine of the Helen Coal Mining Co., Somerfield, Pa. The cars are to be counted against the allotment of each mine.

On Jan. 19 the commission issued Service Order 37, directing the Peoria & Pekin Union Ry. to continue with reasonable promptness and diligence to interchange freight traffic between the Minneapolis & St. Louis R.R. and connecting carriers at the regularly established interchange points at and in the vicinity of Peoria, Ill. The P. & P. U. had served notice that it would discontinue this service at midnight Jan. 20, because of inability to collect what it considered a reasonable amount from the lines served.

Ford Said to Be Negotiating for Coal Land In Central Pennsylvania

Negotiations are reported under way which, if concluded, will mean that Henry Ford, automobile manufacturer, of Detroit, Mich., will acquire the entire Eastern holdings of Cosgrove & Co. and some of the firm's subsidiary concerns, which include large coal operations in Cambria and Somerset counties, Pennsylvania. Reported efforts of Mr. Ford to acquire coal holdings in the Pittsburgh district and also in Ohio, Kentucky and West Virginia lend strength to the report that he is attempting to get control of large mining interests in the central Pennsylvania field.

The Cambria Steel Co. has made two shipments of forty cars each to Henry Ford. These are the first of an order for 500 new steel coal cars. Apparently it is Mr. Ford's intention to avert such a move as was made necessary last summer during the strike, when he threatened to close down for three months unless fuel was made available.

January 25, 1923

United States Coal Commission Issues Supplementary Report

The U. S. Coal Commission issued on Jan. 17 an appendix supplementary to its report submitted to Congress Jan. 15. After reviewing the congressional and state investigations of the coal industry resulting from periodical public dissatisfaction, culminating in the act creating the present Coal Commission, the appendix outlines the purposes of the commission and the progress it has made.

Economic investigations now well under way embrace the compilation by C. E. Lesher, editor of *Coal Age*, of data showing (1) increase in the price of coal and how it compares with the price of other commodities, (2) the spread between mine price and delivered price, showing the level of prices at the mine, delivered to carload buyers and delivered to householders.

Compilation of production costs is proceeding under the direction of David L. Wing assisted by James E. Black and H. S. Plews. Wayne P. Ellis is preparing data on transportation costs, while the investigation of the costs of selling coal at wholesale and retail is progressing under the direction of John W. Adams.

"The investigation of profits over a period of ten years," according to the appendix, "is now being organized by Walter Y. Durand, of the Federal Trade Commission."

Labor investigations, proceeding under the direction of Dr. Joseph H. Willits, include inquiry into wage rates, irregularity of employment, absenteeism and labor turnover, strikes and their causes. The study of earnings, which is being conducted by Miss Anne Bezanson, assisted by Miss France Chalufour, embraces gross and net earnings of each employee, days or hours worked by individual workers and time worked by the mine.

With the co-operation of the Census, Miss Marie L. Obenauer is analyzing census statistics in connection with the commission's investigation of living conditions in mining towns.

Mr. Lesher, as engineer in charge of studies relating to the production, transportation and distribution of coal, is well along in his analysis of irregular operation, over-development and waste of coal. In the various phases of this work Mr. Lesher is being assisted by Mr. Walter, Wayne P. Ellis, H. J. German and C. A. Allen.

In connection with its denial of charges that political patronage is being handed out in the way of clerical positions, the President's Coal Commission has issued a personnel statement giving the exact numbers of its employees in the various classifications. It follows: "The commission's staff as at present constituted includes 56 technical employees and 93 non-technical employees. The members of the technical staff include 4 engineers, 38 investigators, 6 assistant investigators, 7 examiners, 1 mineral geographer. The non-technical employees include 1 secretary, 1 chief clerk and disbursing officer, 1 administrative assistant, 1 confidential clerk, 40 statistical clerks, 11 stenographers, 8 typists, 2 comptometer operators, 7 clerks, 3 calculating machine operators, 1 statistical draftsman, 6 operatives, 1 graphotype operator, 2 file clerks, 3 apprentices and 5 messengers. No member of the commission has a private secretary or messenger."

To Test State Law

Washington, Jan. 22.—The U. S. Supreme Court has granted a writ of certiorari in the appeal of the Central Coal & Coke Co. against Jacob Ocepek and has set the case for hearing Feb. 19. This case involves the validity of the Arkansas state law compelling foreign corporations to accept service and trial in any county of the state where suit may be instituted by a resident of the state.

The company, incorporated in Missouri, has mines in Sebastian County, Arkansas. Ocepek, an employee residing in Sebastian County, brought suit for personal injuries in Lawrence County, which is in another federal district than Sebastian County. Pleas of the corporation to transfer the case to the Federal Court on the ground of diverse citizenship were refused by the State Circuit Court and the State

Supreme Court, the latter affirming a judgment for \$20,000 awarded Ocepek in the lower court. The corporation insists that the case should have been transferred to the Federal Court and tried under federal laws instead of state laws.

Bill to Enlarge Powers of Coal Commission Favorably Reported to House

Representative Winslow, of Massachusetts, chairman of the House Committee on Interstate Commerce, reported favorably from that committee, Jan. 18, a revised bill, No. 13,882, designed to further extend the powers of the United States Coal Commission. This measure, which is intended to amend the act creating the fact-finding commission, is a substitute for the bill introduced in the House, Dec. 9, last, by Representative Winslow, and in the Senate a few days later by Senator Borah. At that time the measure was known as the Borah-Winslow bill.

The provisions contained in the law creating the coal commission are reincorporated and sectionized in the new bill and three new sections, Nos. 9, 10 and 11, have been added. The new sections empower the commission and its authorized representatives to submit written questionnaires to any person, who is required to answer in writing, under oath, within the time specified by the commission or its representative. Under the new sections refusal to answer and return the questionnaire or giving of false testimony, evidence, statements and entries is made an offense for which suitable punishment is provided. In case of refusal to obey subpoenas, to testify or to permit access to documentary evidence the commission is authorized to invoke the aid of the federal district courts to compel obedience.

The new sections are as follows:

Sec. 9.—The commission or any officer, employee, or agent thereof authorized by the commission may prepare and submit to and require to be answered by any person written questions of fact concerning any of the matters which by this Act the commission is empowered or directed to investigate, and such person shall thereupon answer fully and in good faith any and all questions so propounded. Such answers shall be in writing and shall be verified by oath of the persons making them and shall be returned to the commission or its officer or agent within the time which the commission or any officer or agent thereof duly authorized by the commission may prescribe. The oath may be taken before any member of the commission or any officer or agent of the commission by it duly authorized, or before any officer authorized to administer oaths either by the laws of the United States or the laws of the state in which verification is made, but when taken before a notary or other state officer such oath shall be certified under the hand and official seal of such officer.

Sec. 10.—Any person who shall willfully neglect or refuse to attend and testify or depose, or to produce or permit access to any book, account, record, document, correspondence, paper, or other evidence, or to answer any written questions propounded by the commission or any officer or agent thereof, or to return such answers, as herein provided for, and any person who shall willfully give false testimony in respect of any matter or thing under investigation by the commission, or shall willfully make or cause to be made any false entry or statement of fact in any written answer or report called for by the commission or any officer or agent thereof as herein provided for, and any person who shall willfully make or cause to be made any false entry or statement of fact in any book, account, record, document, correspondence, paper, or other evidence, with intent to deceive the commission or any officer or agent thereof, shall be guilty of an offense and upon conviction thereof be punished by a fine of not more than \$5,000, or by imprisonment for not more than one year, or by both such fine and imprisonment.

Sec. 11.—In case of disobedience to any subpoena issued by the commission or any member thereof, or of refusal or neglect to testify concerning any matter or thing under investigation by the commission, or of refusal to make written answer to any question propounded by the commission or any officer or agent thereof, or of refusal to permit access to any book, account, record, document, correspondence, paper, or other evidence, by any person, the commission may invoke the aid of the District Court of the United States for the district in which such person resides, in requiring obedience to its process, orders, and requests; and the several District Courts of the United States are hereby invested with jurisdiction in case of such contumacy or refusal to obey the process, orders, and requests of the commission to issue an order requiring compliance therewith. Any failure to obey such order of the court may be punished by the court as a contempt thereof. For the purposes of this section the Supreme Court of the District of Columbia shall be considered a District Court of the United States.

It is understood that Representative Winslow will call up the bill in the House at an early date and endeavor to have it passed as quickly as possible.

EUROPE'S ONE PRAYER appears to be "Forgive us our debts."—Philadelphia *Evening Public Ledger*.

WISH K.K.K. stood for Koal Kar Koming.—*Brooklyn Eagle*.

Union Calls Off Coal Strike at Connellsville

The strike in the Connellsville coke region is at an end. In convention assembled at the Union Hall at New Salem, Pa., Jan. 18, International organization, United Mine Workers, officially notified the delegates of the sixty locals scattered through Fayette County that, so far as benefits were concerned and further active participation, the International union was through.

The news was presented in speeches by International Representative William J. Feeney, John J. Heinz, an international board member; John O'Leary and President Van A. Bittner, of district 5.

The strike which has just come to an end was the greatest in the history of the coke region. Starting April 1, 1922, at first with an incursion of the western end of the field, the walkout spread in a fan-shaped movement to the south, taking in the Masontown or Klondike region almost to a man. From there day by day the infection spread to the north, finally reaching Uniontown proper.

It is estimated that 20,000 miners were idle during the peak of the strike, and of these, it is estimated, more than 16,000 joined the union.

Big Midwest Operator Tells Why He Favors One Year Continuance of Present Scale

An effort in the Middle West to stir operators up against signing a one-year continuance of the present scale of wages and get them to wire the operator delegates at the New York conference last week to refuse "to be stampeded by the Coal Commission" resulted in at least one counter effort on the part of the head of a big operating company which is subsidiary to a railroad. This operator felt that nothing better could be done under the circumstances than sign for one year, as the commission had suggested. He presented his reasons therefor succinctly. At least one of the Middle Western delegates to the conference replied, before going to New York, that he agreed entirely to the proposed one-year plan but that he would rather draw down a strike than sign for two years, as John L. Lewis, president of the union, seemed ready to demand.

The operator in his letter to delegates said that agitators against the one-year continuance of the present contract are wrong in their conclusion that the operators may be frightened into taking action simply because the government fact-finding commission has suggested a renewal of the present agreement for another year.

"As I see it," says the operator, "the operators are interested in satisfying the public demand provided it is not injurious to the coal-mine owners' interests, and I cannot see that any harm whatever could possibly come to the operators by their agreeing to continue the present contract for another year, and my reasons are embodied in the following:

(1) It would be a good stroke of business policy to do it, because the government's commission has requested it.

(2) Consumers generally (and they pay the bills) apparently prefer the present high cost rather than have a suspension of the coal mines of the country this year.

(3) A definite and substantial policy which will satisfy the public and the government that contention with the mine workers is warranted cannot be sustained until the government commission makes its report.

(4) Contention with the mine workers for lower wages to meet competition of the non-union fields would not, as I see it, be a valid reason, because the non-union operators could, and would, when they so desire, change their rates of wages as circumstances warranted.

(5) It would, I feel, be folly to allow a strike to occur this year, for which the operators might in part, or wholly, be held responsible.

(6) If the miners demand that the agreement be extended for two years instead of one, it would, I feel, be good policy to refer the matter to the commission for its decision, saying to the commission that it is not the desire of the operators to extend the present high mining rate and day-wage scale for a longer period than is absolutely necessary and that the demand of the operators for a twelve-month agree-

ment is based upon their judgment that the commission will have made its report in sufficient time to be used in January, 1924, if not earlier.

"It must not be forgotten that public opinion can, and will, bring sufficient pressure to bear, through the press and government representatives, to force their will upon the industry, and we had better have their friendship than their ill will, and the mine owners can rely upon as fair treatment as they are entitled to; more than that they should not expect.

"It would be suicidal to run counter to public opinion and the government's views."

New Kansas Governor Would Kill Industrial Court; "Can't Be Done," says H. J. Allen

Both the Kansas Public Utilities Commission and the Court of Industrial Relations, which has played so important a part in coal mining labor troubles in that state, are doomed if the newly elected Governor Davis, Democrat, has his way. Mr. Davis bitterly attacked the court all through his campaign and in his first message to the Legislature, Jan. 10, he asked the abolition both of the court and of the commission. In their stead he urged legislation to permit the appointment by the Governor of two commissioners. Ex-Governor Henry J. Allen, Governor Davis' immediate predecessor and stanch advocate of the industrial court, said in Chicago the 12th that the Republican Legislature would see to it that the Governor did not touch the industrial court.

On the day of his inauguration Governor Davis received a petition from organized labor, addressed jointly to him and the Legislature, for the abolition of the Court of Industrial Relations and the restoration of the old office of Labor Commissioner, the commissioner to be named by the state Federation of Labor. The latter demand carried with it a request for the restoration of another practice, ended many years ago, of permitting union coal miners to name the State Mine Inspector. There is no question of the support the Governor will receive from Union labor in his move to kill the court, but Kansas is a farm state, where labor can help to swing an election, but where it cannot do the job by itself.

House Move Would Bar Judge Alschuler from Coal Commission; Senate Favors Him

By a substantial majority the committee on Interstate and Foreign Commerce of the House of Representatives has reported out the amendments to the coal commission act eliminating the provisions which would allow Judge Alschuler to serve as a member of the commission. It was pointed out by members of the committee that there is no intention to reflect on Judge Alschuler. The committee feels that it would set a bad precedent to levy on the bench for talent with which to conduct executive functions. Since the judiciary is made up, with few exceptions, of outstanding men the temptation would be great to draft these men into various services, once the way was made easy. Then, too, the committee feels that it is bad for the judiciary itself to have a judge committed to some policy or other when it is certain that he will be called upon to pass judicially on many such cases brought before his court.

The chances are, however, that the matter excluded by the House committee will be restored by the Senate. The Senate hardly could do otherwise now that it has confirmed the nomination of Judge Alschuler. There is no reason, argue some of the members of the upper house, why the public and the government should not have the advantage of the services of any member of the judiciary when he happens to be particularly fitted for an important task.

In this particular instance insistence by the House on the attitude of its committee would rob the President's Coal Commission of one of its strong members. It would remove from the commission a man who has lived with its work for three months. It would be difficult for a substitute to bring himself abreast with the other members. Moreover, Judge Alschuler knows the seamy side of unionism as well as its good features.

Agreement Reached to Renew Wage Contract for One Year

Agreement to renew the existing wage contract for one year from April 1, 1923, was reached by the subcommittee of operators and miners from Illinois, Indiana and eastern Ohio in session at the Waldorf-Astoria, New York, late Tuesday afternoon, Jan. 23. The subcommittee was scheduled to make such a report to the full conference at 10 a.m. on Wednesday and there was not the least doubt that by noon on Jan. 24 a contract would be signed. Thus all possibility of a strike in 1923 is eliminated.

When the session opened on Tuesday, Illinois and Ohio wanted to renew for one year. Indiana moved to amend the motion, substituting two years for one. The amendment was defeated, having only Indiana's support. Indiana then moved to amend by striking out the penalty clause, explaining that they considered the penalty clause a bar to damage suits where loss had been sustained by violation of contract. Illinois and Ohio voted no, and this amendment was lost.

A subcommittee of two, John L. Lewis and Phil Penna, was then appointed to retire and iron out the differences. They retired to another room, where for an hour or more they went over the situation. There is no account of what transpired there but it is understood that Lewis gave assurance of contract enforcement in Indiana, for the result of the meeting was a report to the full subcommittee to accept the one-year contract without change in conditions or wages.

Other districts will now begin the formalities of negotiation, but it is generally understood that all union fields will soon accept the lead of the three-state conference.

With a cut and dried program the United Mine Workers and operators from Illinois, Indiana and eastern Ohio—the old Central Competitive Field minus Pittsburgh—met in New York on Thursday, Jan. 18, at the call of John L. Lewis and Phil Penna, to negotiate a wage contract for the period beginning April 1, 1923. Preliminaries only were dealt with the first day, the conference comprising full delegations from all fields meeting at the Hotel Pennsylvania and going through the formalities of electing officers and selecting a credentials committee.

WESTERN PENNSYLVANIA GROUP KNOCK AT DOOR

This credentials committee had a job on its hands at once, for there were a group of operators from western Pennsylvania knocking at the door. These operators, representing so-called independents, are outside the regular organization in the Pittsburgh district and were among those who early signed the Cleveland agreement last August. They were not seated at this conference on the ground that they do not represent the district from which they come. This left Illinois, Indiana and eastern Ohio to participate. Southern Ohio put in no appearance, but has done nothing, it is pointed out, to hinder the proceedings and it is understood will accept the findings of this conference.

When the meeting convened Friday the miners presented their demands in full, as of the February, 1922, convention at Indianapolis. This list included the 6-hour day, the 5-day week, abolition of the penalty clause, as well as no reduction in wages. The operators promptly voted down the demands, and after some further skirmishing the whole matter was referred to a subcommittee of two on each side from each district and the officers of the union and of the meeting. This is as has been customary for some 25 years. The subcommittee and officers are as follows:

Operators—S. H. Robbins and W. S. Haskins, of Ohio; Rice Miller and H. C. Perry, Illinois, and M. L. Gould and P. H. Penna, Indiana.

Miners—Frank Farrington and Harry Fishwick, Illinois; John Hessler and Will Mitch, Indiana; Lee Hall and G. W. Savage, Ohio.

Officers of the Conference—Michael Gallagher, chairman; William Green, secretary, and Walter L. Robinson, assistant secretary.

Officers of the United Mine Workers—John L. Lewis, president; Philip Murray, vice-president.

Saturday the subcommittee began work. No results were announced and the meeting was resumed on Monday at 10 a.m., this time at the Waldorf. Adjournment came at 2 p.m. and another session began on Tuesday morning, with no conclusion reached. The only statements made were perfunctory announcements of progress and emphatic assertions that there would be no strike; that in fact there is not the least possibility of a strike.

It having been predetermined by circumstances on receipt of Mr. Hammond's second telegram to the joint conference at Chicago early this month that there would be no demand from either side for changes in wage rates, all that remained, so it appeared on Saturday, was to decide whether the contract would be for one year, as Mr. Hammond had formally requested, or for two years, as demanded by the union and reported to have been "casually" suggested by Mr. Hammond some two weeks ago.

QUESTION OF ONE OR TWO YEARS AT ISSUE

This question of one year or two years occupied a prominent place in the discussions on Friday and Saturday. The union contended for two years and Indiana and Ohio fell in line. The arguments that are understood to have caused these operators to be willing to take on the longer period were that wages in other industries were going up now and that a year from now it might be necessary to give an increase and, more important, that the operators would be at a decided disadvantage were they to try for a new contract in 1924 with a presidential campaign and election going on. It was argued among the operators that the political pressure on them in 1924 to settle without trouble might be so great as to give the union a chance to further advance its cause without opportunity to go into the merits of the questions involved.

Illinois, however, held out for a one-year agreement, feeling that their district, above all others in the meeting, will suffer the most from non-union competition with the present high wage scale renewed. The delegation of operators from that field, as well as from Indiana, has been deluged with propaganda and letters and telegrams from "back home" urging the conferees to demand a wage reduction. The delegation in New York, however, found out the impossibility of any such demand and is going ahead to get the best deal possible in view of the admitted strength of the union and the public declaration of Mr. Hammond for a renewal of present wages. When Illinois held out for a one-year contract, the others agreed, because under the rules of their joint conference the vote must be unanimous on every point and there was no disposition to halt the conference on that score.

On Monday, however, a new element was introduced. One group of operators, understood to have been Indiana, asked John L. Lewis to go on record, if not in the contract, in favor of some method more effective than that now agreed upon for contract enforcement.

Indiana has suffered greatly in recent years from petty strikes. From this cause there has been no redress, the district president having refused to bring them to settlement—afraid, it is commonly believed, that he would lose his job if he interfered. Ohio and Illinois, under Lee Hall and Frank Farrington, have had no such troubles. The policy of John E. Lewis has been that he would exercise his own judgment and will in the matter as to whether he would consider an appeal from the state officers in such matters. It is alleged that in general he has refused to assume jurisdiction. What the Indiana operators sought was some declaration from Mr. Lewis that when a mine was struck and after all proper efforts had been exhausted to find a settlement, he would, on appeal from the operator, arbitrate the case.

Rumors that the operators had sent a delegation to Washington to find out what assurance would be given by the government that no prosecution under the Sherman Law will follow an interstate agreement were strenuously denied.

First Five Herrin Prisoners "Not Guilty"; Remaining Massacre Cases Will Proceed

The first five men charged with murder in connection with the Herrin massacre have been declared not guilty. A jury of one miner and eleven farmers, two of whom are former miners, returned this verdict in the Williamson County Court at Marion, Ill., Jan. 19, after twenty-six hours' deliberation. The five prisoners, four of them union coal miners and the fifth a laborer of Herrin, Ill., had been on trial since Dec. 13, 1922, for the murder of Howard Hoffman, one of the twenty-one non-union men shot and cut to death June 22, 1922, after 48 men besieged in the Lester strip mine near Herrin had surrendered to a mob.

The state's attorneys prosecuting the case had little to say after the verdict was returned except that acquittal in the face of such evidence was due to intimidation of jurors. Considering the sentiment of Williamson County, there is no surprise at the outcome of the case. The region is a United Mine Workers stronghold, and the local authorities not only did not interfere with the massacre but failed to arrest a single man for it. Every obstacle was put in the way of state and government agents who worked up the case during the summer before a grand jury finally was impanelled and returned 416 indictments for murder, conspiracy to murder and conspiracy to riot against 77 men.

"Of course we will proceed to try the rest of the cases," was Attorney General Brundage's only comment. No date has been set, however. The same five men adjudged not guilty of murdering Hoffman are indicted for murder in the case of the deaths of several more of the 21 dead men. Thus none of the five is a free man. They are Otis Clark, union official; Leva Mann, Joe Carneghi, Pete Hiller and Bert Grace. Each will figure in the series of trials that may now ensue before the state gets through prosecuting. It is impossible to get a change of venue so as to move the trials from Williamson County, where the massacre took place, so the remaining trials will be held in Marion.

The battalion of attorneys employed by the United Mine Workers to defend the five prisoners—attorneys paid from the union defence fund, contributed to by at least one member of the jury and by most of the defence witnesses who impeached the damning testimony of the state's witnesses—issued a statement after the verdict was in, pushing to the fore the union propaganda that the prosecution of the whole Herrin case is nothing less than persecution of labor by capital. The statement read thus:

"A jury composed almost totally of Williamson County farmers returned a verdict of not guilty as to all the defendants. The defendants' attorneys, of course, feel happy at the result; happy because this may and ought to be the birth of a new era in industrial disputes in America. The defense was directed against the vicious and unwarranted, brutal and murderous use of a private army of gunmen. If this trial has taught the lesson well that hereafter the weapons of the employers' private army shall not be directed against human beings, then the trial, with all its sacrifices, has not been in vain."

"If only the American public could be advised of the true facts as they fell from the lips and manner of the witnesses upon the stand, no real American would disagree with the verdict rendered by this jury of farmers. It was the only righteous verdict which could have been rendered against an army of invaders."

During the last days of testimony before the case was suddenly put into the hands of the jury, the defence continued its long string of character witnesses, all attempting to impeach the incriminating testimony of the prosecution. They testified that Donald M. Ewing, a newspaper reporter, could not possibly have been at the cemetery in time to offer one of the dying men a drink of water only to be met with the point of Bert Grace's gun. The bodies were removed, they all testified, before the time estimated by Ewing as about the hour when that brutal event took place.

They testified that Dr. O. P. Shipman couldn't possibly have been at the cemetery to see, as he declared he did see, Joe Carneghi, Leva Mann and two other indicted men shoot into the bodies of the six men roped together by their necks.

They said he was at or near his office at the time he said the shooting took place. They said he privately confessed he wasn't sure of the identity of a single man in the mob of June 22.

Two or three of those who tried to impeach the doctor's testimony admitted they were miners employed by the union to gather defence evidence. Practically every one of the defence witnesses are miner's union members and admitted they were contributing to the defence fund.

One of the defence witnesses, G. J. Frick, a Marion undertaker and former miner, said he reached the cemetery with his ambulance at 9:25 the morning of the slaughter and waited for the men to die before he took the bodies.

"You mean to say you let the ambulance stand there while men were lying on the ground dying?" quizzed a prosecution attorney.

"I went to a telephone to call Coroner McCown," said Frick.

"And you saw those men there with their throats cut and shot and bleeding and you heard them begging for water, and did nothing for them?"

"They weren't begging for water when I first came there but they were when I came back."

"Did you get any water?"

"No."

The defence appeared to do everything it could to avoid the introduction of evidence such as this about the brutality of June 22, even to the maneuver of waiving argument after State's Attorney Delos Duty had summarized the case. This prevented Attorney General Brundage and others from making any statements to the jury at the wind-up, when the case was turned over to that body.

Bids Opened for 76,100 Tons of Bituminous Coal for Navy Yards and Naval Stations

Bids for supplying 76,100 tons of bituminous or semi-bituminous coal for navy yards and naval stations were opened Jan. 19 by the Bureau of Supplies and Accounts of the Navy Department. The requirements were divided into two classes, one covering 25,900 tons for delivery during February and March, the other covering 50,200 tons for delivery between February and June, inclusive. The bids follow:

400 tons, for delivery to Naval Ammunition Depot, Lake Denmark, N. J., during February and March: Dexter & Carpenter, Inc., New York, \$5.04 per ton, f.o.b. mines; Emmons Coal Mining Co., New York, \$8.97 per ton; George D. Harris & Co., New York, \$8.13 per ton.

1,000 tons, for delivery at Lake Denmark, February to June: Empire Coal Mining Co., Philadelphia, \$8.08 per ton; George D. Harris & Co., \$7.99 per ton.

10,000 tons, for delivery to Navy Yard, Washington, D. C., during February and March: C. G. Blake & Co., Cincinnati, \$8.57 per ton; L. A. Snead Co., Washington, D. C., \$8.04 per ton.

17,000 tons, for delivery at Washington, February to June: Chesapeake & Ohio Coal & Coke Co., \$5.93 per ton, f.o.b. mines; L. A. Snead Co., \$7.74 per ton.

400 tons, for delivery at Bellevue Magazine, D. C., January to June: Emmons Coal Mining Co., \$7.32 per ton; L. A. Snead Co., \$8.04 per ton.

2,000 tons, for delivery at White Plains, Md., February and March: Dexter & Carpenter, Inc., \$8.45 per ton; Emmons Coal Mining Co., \$8.09 per ton; L. A. Snead Co., \$8.59 per ton.

5,000 tons, for delivery at White Plains, Md., February to June: Emmons Coal Mining Co., \$7.86 per ton; Imperial Coal Corporation, New York, \$7.61 per ton; L. A. Snead Co., \$8.31 per ton.

7,000 tons, for delivery at Naval Academy, Annapolis, Md., February and March: Dexter & Carpenter, Inc., \$8.38 per ton, in barges, or \$7.88 per ton, rail delivery.

6,500 tons, for delivery at Portsmouth Navy Yard, Norfolk, Va., February and March: C. G. Blake Co., \$8.68 per ton; Dexter & Carpenter, Inc., \$8.55 per ton; Emmons Coal Mining Co., \$9.16 per ton.

12,000 tons, for delivery at Norfolk, February to June: Chesapeake & Ohio Coal & Coke Co., \$5.93 per ton.

Midwest Sees Combination Railroad Labor Board and I. C. C. Coming for Coal Industry

The final paragraph of the United States Coal Commission's preliminary report of Jan. 15 clinched it for Midwest coal operators. The commission is going to recommend regulation of coal by commission. The Midwest has expected this. Now it is convinced. The commission is to be a sort of composite of the Railroad Labor Board and the Interstate Commerce Commission with power to restrict the opening of new mines, to restrain miners from striking too impetuously and to exercise a measure of price control. The commission studiously avoids saying so openly, but read the last paragraph of the report, say observers in the Middle West.

That final paragraph reads thus: "The commission believes that the public interest in coal raises fundamental questions of the relation of this industry to the nation and of the degree to which private right must yield to public welfare. It may be that both private property in an inexhaustible resource and labor in a public service industry must submit to certain modifications of their private rights receiving in return certain guarantees and privileges not accorded to purely private business or persons in private employ."

COAL IS A PUBLIC UTILITY, SAYS CHICAGO

In other words, according to much individual opinion in Chicago, which is a center of coal operations for Illinois and Indiana, coal is a public utility and should be under government control henceforth. Though coal deposits are nearly inexhaustible, anybody and everybody should not be allowed to produce coal for sale unless they can show that public necessity and convenience demand it. Since coal is a public utility the right of strike and lockout must be curbed materially and prices of coal must not be left to the well-known but often troublesome law of supply and demand any more than the price of gas. But neither should the public be left free to upset the whole coal industry by holding out until coal prices are bumping the bottom and then by pushing into the market madly with disastrous results all around. Purchasing should be steadied and made more uniform in order that production and working time also can be steadied and made uniform.

"Sounds good to me," said one veteran operator. "It has long been apparent that something of this sort is essential in this industry. I'll admit I'm tired to death of this constant labor struggle and this constant struggle over the coal market. Coal is one of the most tiresome and unsatisfactory necessities of life to produce and handle. I'm getting along in years and don't want to fight all the time. I'd rather do business on a business basis. I want a reasonable number of miners working for me at a reasonable wage a reasonable number of days a year. I want the public to have my coal at a reasonable price and I want it to take that coal through a reasonable number of weeks of the year instead of all in the winter. It would be a lot more pleasant for me to take a reasonable profit—yes, a pretty small profit—steadily right along, than to work on this feast-and-famine scheme. If the commission recommends what it appears to be preparing to recommend, I hope Congress and the country carry out those recommendations."

Three other active operators expressed much the same opinion, and they were not veterans worn by the long labor and market struggle either. They were one in banking firmly upon the business judgment and fairness of the commission to produce a solution for some of the principal ills of the industry—a solution that, once put into effect, will stick.

"But," remarked one man wise in the ways of the United Mine Workers, "how do you think a coal board will get along with the union? Can you imagine a tougher nut for any government board to crack? Where is there any labor group dealing with the government that is so unified? Or so bullheaded? Or in the hands of so few men? And,

though you might say it's better to deal with the group through a few men than through many, yet you mustn't overlook the fact that the size of the miners' union is expected to be shrunk down and the free and easy power of strike to be curbed. That hits those few men right where they live. The importance of their jobs depends upon their ability to fight the miners' battle unhampered by the government or anybody else. Won't it be a 'backward step' for the union to permit the coal industry to get into the hands of a coal commission which has the power to enforce its rules? The union is not going to take any 'backward step' you know."

"Right there will be the whole trouble with this scheme," contributed another operator who heard the comment. Union labor certainly will rally at Washington when this commission legislation comes up for passage, to see to it that labor has a little more than 50 per cent representation on this commission. The difficulty, as I see it, will be to prevent any government coal board from falling into labor hands."

Many Midwesterners are convinced now that government board control—which some of them call "the McAuliffe plan," because Eugene McAuliffe, former president of the Union Colliery Co., worked out something of the sort for the Coal Commission—is the logical thing to result from the commission's work. Most of them watch for it hopefully.

Some there are who hoot at it. These are mainly operators of a size and experience which lead them to feel that they can care for themselves in all weathers and that the law of supply and demand is sufficient to control at all times. These are strong for a continuance of present conditions, which they think would eventuate in most of the mines of the country falling into the hands of a small number of large and competent ownerships. Once in these hands—a season or two like the one in prospect for 1923 might produce this alignment—war to the death with union labor could go on to its logical end, which is union defeat. For those operators, there is no better way.

Howat Out of Prison on Parole; Officers Try to Restore Harmony in Kansas

Alexander Howat, deposed president of the Kansas union coal miners, and five other deposed officials who had been, like Howat, serving a sentence of one year for contempt of court in calling a strike, were paroled Jan. 20 by Judge D. H. Woolley at Pittsburgh.

Judge Wooley, who paroled the prisoners from the Crawford County Jail at Girard, said that the applications for release referred only to the sentences for one year, and did not mention the indefinite sentence imposed against the men, requiring their imprisonment until they consented to testify before the Kansas Court of Industrial Relations.

As a first move in harmonizing and solidifying the coal miners of the southeastern Kansas field, the recently elected officers of District 14 have announced suspension of the fine of \$15 assessed against miners of the district who failed to quit work when ordered to do so by a district convention June 16, 1922. The dispensation extends to March 1 for all who desire to return to the fold. By the election, a ticket recognized as representing the Howat faction was put into office.

During the strike, unauthorized by international officials, last year, in which Alexander Howat, then president of the district, and John L. Lewis, international president, clashed, the district lost its charter. Autonomy was restored with the assumption of office by new officers the first of this year. The present move is to recruit to the newly recognized organization some 2,000 miners who continued to work last summer and who have refused to pay the fine of \$15 in addition to the initiation fee of \$10 that is exacted if they would rejoin the union.

Production and the Market

Weekly Review

Reports are general of easiness in all markets. Anthracite is moving quicker to Eastern points but there is dullness in the movement of bituminous coal. Production of soft coal, notwithstanding railroad difficulties, slow buying and illness among the miners in some of the Southern non-union fields, hangs around 11,000,000 tons. *Coal Age* Index of spot bituminous prices decreased 7 points last week and stood at 358 on Jan. 22, with a corresponding average price at the mines of \$4.33 as compared with \$4.42 the preceding Monday, reflecting the general letdown accompanying the warmer weather and the spread of feeling that there will be no strike on April 1.

With the strike scare removed and the country generally with fair stocks of soft coal, there is nothing in sight save temporary and local car shortages to hold the market up. In another thirty days the stringency caused by the anthracite shortage will have been passed.

RUHR SHUTDOWN MAY BOOST DEMAND IN AMERICA

Many in the coal trade are watching the struggle in the Ruhr in the expectation that a general shutdown of this large coal field, where about 2,000,000 tons a week is produced, will result in a demand for outside coal greater than England can supply. The only other source, of course, is the United States.

High-grade coals are generally under contract and little but lower grades are available on the spot market.

The anthracite situation is much quieter. Production continues to be interfered with by petty strikes over which the union leaders contend they have no control. The steam sizes of anthracite are being quickly absorbed. Buckwheat is easier and quotations indicate that the independent products are not moving as easily as a week back.

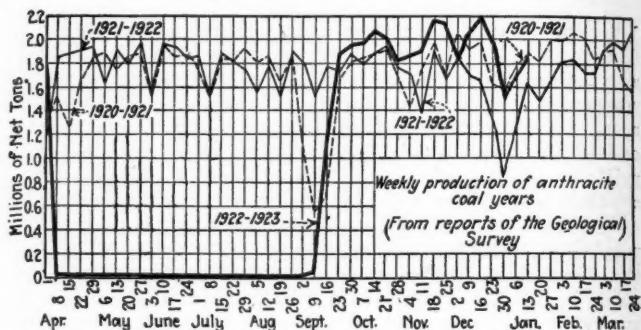
"Revised estimates for the week Jan. 8-13 indicate a total output of soft coal, including coal coked, mine fuel and local sales, amounting to 11,172,000 net tons," says

the Geological Survey. "The final estimate for the first week of the year is 10,993,000 tons.

"Preliminary reports for the third week in January show 44,736 cars loaded on Monday and a decline of 32,891 cars on Tuesday, and 30,582 on Thursday. The total output for the week Jan. 15-20 is expected to be about 10,900,000 to 11,000,000 tons."

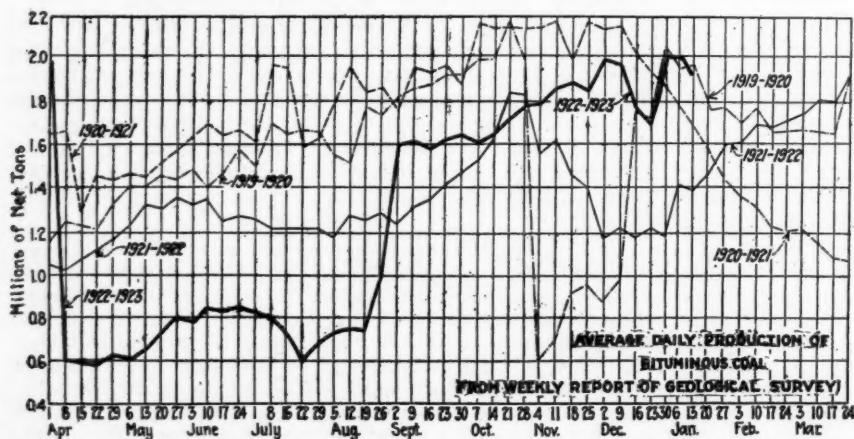
Midwest Situation Easier

A general let-down in coal trade made itself felt throughout the West and Middle West during the past week. Continued warm weather and the increasing spread of certainty that there will be no strike are held responsible. Steam coals and the middle sizes of fuels were all having a hard time to avoid distress on cars and the sinking sensations spread



even to domestic sizes, though the demand for them was fair and the stronger companies of southern Illinois and Indiana managed to maintain their price levels in most cases. There was general prophecy that prices will slump all around by the end of this week.

In Chicago, shippers were compelled to work hard toward the end of the last week to move everything they had in transit. Week car supply in some fields performed the usual feat of saving the situation from absolute collapse of the market. Franklin County screenings had receded to an average of \$2.75, which was a small recession, but Central Illinois, always early to show the effects of pressure, slipped 25 or 50c., lowering lump to \$4.25, mine run to \$3 and



Estimates of Production

(Net Tons)

BITUMINOUS

	1921-1922	1922-1923
Dec. 30.....	5,961,000	10,171,000
Jan. 6 (b).....	7,476,000	10,993,000
Jan. 13 (a).....	8,302,000	11,172,000
Daily average.....	1,384,000	1,862,000
Calendar year.....	15,778,000	22,165,000
Daily average cal. year.....	1,214,000	1,583,000

ANTHRACITE

	1921-1922	1922-1923
Dec. 30.....	851,000	1,560,000
Jan. 6 (b).....	1,242,000	1,725,000
Jan. 13 (a).....	1,643,000	2,113,000
Calendar year.....	2,885,000	3,838,000

COKE

	1921-1922	1922-1923
Jan. 6 (b).....	108,000	309,000
Jan. 13 (a).....	119,000	322,000
Calendar year.....	227,000	631,000

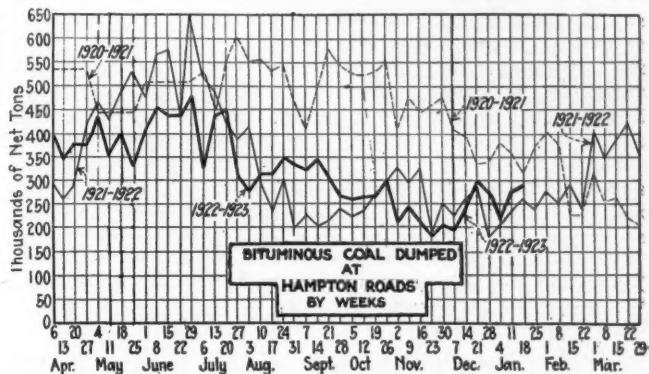
(a) Subject to revision. (b) Revised from last report.

screenings to \$1.75. Indiana coals showed about the same downward movement. Very little Eastern fuel reached that market. Every man in the coal trade was hoping fervently that Saturday night's thin clouds from the north and west would roll up a storm and bring icy blasts of wind.

In St. Louis conditions were about the same. Trading was mostly in the cheaper coals and nobody showed any desire to buy heavily for storage. Poor car supply was all that kept the Carterville mining field out of a bad slump. Railroad tonnage out of that field remains good, however. The same conditions prevailed in Jackson County and the DuQuoin region. The Mt. Olive region, normally a heavy St. Louis shipper, saw its volume to that city slump, but it was able to move a good deal to Chicago. Its car supply was better than the demand required. Standard field mines without railroad contracts averaged between 1½ and 2 days during the past week. All sizes there are in surplus and hard to move.

The price softening noticeable in most Western regions is only beginning to be felt in western Kentucky, where the lower grade fuels have dropped some but where domestic and industrial demand is still strong enough to keep the market right side up. There is no big general movement in any direction, however. Coal movement through Louisville has been poor of late because of the congestion

on the Kentucky & Indiana Terminal R.R., which has recently suffered the loss of a number of yard engines condemned for poor condition.



The Northwest has not worried much over the coal situation during the past week. Though dock stocks contain a remarkably small proportion of free coal considering the time of year—there is only 450,000 tons free on the docks at the Head-of-the-lakes to last that region until the re-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Jan. 23	Jan. 8	Jan. 15	Jan. 22		Market Quoted	Jan. 23	Jan. 8	Jan. 15	Jan. 22
		1922	1923	1923	1923†		Cleveland	1822	1923	1923	1923†
Smokeless lump.....	Columbus....	\$3.30	\$7.25	\$7.25	\$6.75@ \$7.75	Pitts. No. 8 mine run.....	\$1.90	\$3.50	\$3.40	\$3.50@ \$3.75	
Smokeless mine run.....	Columbus....	2.15	6.60	6.60	6.50@ 6.75	Pitts. No. 8 screenings....	1.65	3.30	3.15	3.15@ 3.35	
Smokeless screenings.....	Columbus....	1.50	5.85	5.85	5.50@ 6.50						
Smokeless lump.....	Chicago....	2.85	7.75	7.75	7.50@ 8.00						
Smokeless mine run.....	Chicago....	2.15	6.35	6.35	6.25@ 6.50						
Smokeless lump.....	Cincinnati....	2.85	7.50	7.75	7.00@ 8.00						
Smokeless mine run.....	Cincinnati....	1.90	6.25	6.35	6.00						
Smokeless screenings.....	Cincinnati....	1.40	6.25	6.10	6.00						
*Smokeless mine run.....	Boston....	4.70	8.35	8.75	8.50@ 9.00						
Clearfield mine run.....	Boston....	1.95	5.10	4.85	4.50@ 5.00						
Cambridge mine run.....	Boston....	2.45	5.60	5.50	5.00@ 5.50						
Somerset mine run.....	Boston....	1.80	5.35	5.10	4.75@ 5.25						
Pool I (Navy Standard).....	New York....	3.20	6.35	5.75	5.50@ 6.00						
Pool I (Navy Standard).....	Philadelphia....	3.00	6.00	5.50@ 6.00							
Pool I (Navy Standard).....	Baltimore....	2.40	6.60	6.10	6.50						
Pool 9 (Super. Low Vol.).....	New York....	2.25	5.85	5.25	5.00@ 5.50						
Pool 9 (Super. Low Vol.).....	Philadelphia....	2.30	5.75	5.75	5.40@ 5.75						
Pool 9 (Super. Low Vol.).....	Baltimore....	2.10	6.10	5.75	5.00@ 5.25						
Pool 10 (H. Gr. Low Vol.).....	New York....	2.10	5.35	4.75	4.25@ 4.75						
Pool 10 (H. Gr. Low Vol.).....	Philadelphia....	2.00	5.25	5.25	5.10@ 5.30						
Pool 10 (H. Gr. Low Vol.).....	Baltimore....	1.95	5.60	5.20	4.25@ 4.50						
Pool II (Low Vol.).....	New York....	1.70	4.35	4.25	3.25@ 3.50						
Pool II (Low Vol.).....	Philadelphia....	1.70	4.35	4.35	4.10@ 4.35						
Pool II (Low Vol.).....	Baltimore....	1.70	5.00	4.20	3.75						

High-Volatile Eastern

Coal 54-64 (Gas and St.).....	New York....	1.45	4.00	3.60	3.25@ 3.50						
Pool 54-64 (Gas and St.).....	Philadelphia....	1.50	4.30	4.15	3.50@ 3.80						
Pool 54-64 (Gas and St.).....	Baltimore....	1.40	4.25	3.85	3.00@ 3.50						
Pittsburgh so'd gas.....	Pittsburgh....	2.65	5.25	5.25	5.25@ 5.50						
Pittsburgh mine run (St.).....	Pittsburgh....	2.15	3.60	3.35	3.50						
Pittsburgh slack (Gas).....	Pittsburgh....	1.75	3.25	3.20	3.35@ 3.50						
Kanawha lump.....	Columbus....	2.60	6.25	6.25	6.00@ 6.50						
Kanawha mine run.....	Columbus....	1.65	3.75	3.75	3.25@ 3.50						
Kanawha screenings.....	Columbus....	1.15	3.35	3.35	3.00@ 3.25						
W. Va. lump.....	Cincinnati....	2.50	6.50	6.50	5.50@ 6.50						
W. Va. Gas mine run.....	Cincinnati....	1.40	3.85	3.75	3.50						
W. Va. Steam mine run.....	Cincinnati....	3.60	3.35	2.90@ 3.25							
W. Va. screenings.....	Cincinnati....	1.10	3.35	3.25	2.75@ 3.25						
Hoosier lump.....	Columbus....	2.60	5.25	5.35	4.75@ 5.50						
Hoosier mine run.....	Columbus....	1.90	3.10	3.10	2.75@ 3.00						
Hoosier screenings.....	Columbus....	1.20	2.85	2.75	2.50@ 2.75						
Pitt. No. 8 lump.....	Cleveland....	3.00	5.10	5.00	4.75@ 5.50						

* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Jan. 15, 1923		Jan. 22, 1923†	
			Independent	Company	\$9.00	\$7.75@ \$8.25	Independent	Company
Broken.....	New York.....	\$2.34		\$7.60@ \$7.75				
Broken.....	Philadelphia....	2.39	\$7.00@ 7.50	7.75@ 7.85				
Egg.....	New York....	2.34	7.60@ 7.75	7.60@ 7.85	9.25@ 12.00	8.00@ 8.35	9.25@ 12.00	8.00@ 8.35
Egg.....	Philadelphia....	2.39	7.25@ 7.75	7.75	9.25@ 11.00	8.10@ 8.35	9.25@ 11.00	8.10@ 8.35
Egg.....	Chicago*	5.09	7.50	8.25	12.00@ 12.50	7.20@ 8.25	12.00@ 12.50	7.20@ 8.25
Stove.....	New York....	2.34	7.90@ 8.20	7.90@ 8.10	9.25@ 12.00	8.00@ 8.35	9.25@ 12.00	8.00@ 8.35
Stove.....	Philadelphia....	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 11.00	8.15@ 8.35	9.25@ 11.00	8.15@ 8.35
Chestnut.....	New York....	2.34	7.90@ 8.20	7.90@ 8.10	9.25@ 12.00	8.00@ 8.35	9.25@ 12.00	8.00@ 8.35
Chestnut.....	Philadelphia....	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 11.00	8.15@ 8.35	9.25@ 11.00	8.15@ 8.35
Chestnut.....	Chicago*	5.09	7.75	8.25	12.00@ 12.50	7.35@ 8.25	12.00@ 12.50	7.35@ 8.25
Range.....	New York....	2.34						
Pea.....	New York....	2.22	5.00@ 5.75	5.75@ 6.45	7.50@ 11.00	6.15@ 6.30	7.50@ 11.00	6.15@ 6.30
Pea.....	Philadelphia....	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 9.50	6.15@ 6.20	7.00@ 9.50	6.15@ 6.20
Pea.....	Chicago*	4.79	6.00	6.25	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1.....	New York....	2.22	2.75@ 3.00	3.50	5.25@ 6.25	4.00@ 4.10	5.25@ 6.00	4.00@ 4.10
Buckwheat No. 1.....	Philadelphia....	2.14	2.75@ 3.25	3.50	5.00@ 5.50	4.00	5.00@ 5.50	4.00
Rice.....	New York....	2.22	2.00@ 2.50	2.50	2.75@ 3.00	2.75@ 3.00	2.40@ 2.75	2.75@ 3.00
Rice.....	Philadelphia....	2.14	2.00@ 2.50	2.50	2.75@ 3.00	2.75@ 3.00	2.75@ 3.00	2.75@ 3.00
Barley.....	New York....	2.22	1.50@ 1.85	1.50	1.65@ 2.00	1.50@ 2.00	1.50@ 2.00	1.50@ 2.00
Barley.....	Philadelphia....	2.14	1.50@ 1.75	1.50	1.50@ 2.00	2.00	1.50@ 2.00	2.00
Birdseye.....	New York....	2.22		2.00@ 2.50		2.10		2.10

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type, declines in italics.

opening of navigation—yet prices are not stiffening much because rail coal is coming in steadily and at shading prices and because the weather for several days has been mild.

The shortage of hard coal agitates fewer people every day. Although dock supplies are practically gone and rail anthracite is confined mostly to egg and buckwheat, which are unpopular sizes, yet there is no mob storming the dock gates for the available fuel. Soft weather has had something to do with that. The general turn from hard to soft coal and to coke and briquets for domestic use has further aided to produce this effect. It is now estimated that Duluth and Superior have received about 80 per cent of their normal supply of hard coal. If other communities in the upper country are as well supplied, then the shortage of anthracite is not so painful as it might be. In Wisconsin the State Fuel Commission has not carried out its threat to seize the available anthracite in order to more carefully apportion it.

The West and Southwest also float along easily. The mild weather of the past week has been general. In Utah, with the thermometer running up to 58, domestic demand has softened a good deal and mines have been working recently only about 40 per cent. There is a good industrial call however. Several operations are preparing to turn their whole output into slack as a result.

Because of poor domestic demand Colorado lignite prices varied widely but bituminous in that state held fairly steady with production at about half-speed. Colorado Fuel & Iron Co. mines get good running time in the Walsenburg and Trinidad districts because of the company's big steel contracts which have the Pueblo mills operating steadily now. Domestic demand for coke in Denver has picked up. C.F.&I. domestic lump coal sells at retail for \$14 and nut size for \$12. Denver Gas & Electric coke is priced at \$10.

Around Kansas City the coal market would be shot completely to pieces were it not for the short car supply. Short cold snaps are all that have kept many mines from shutting down cold. Kansas lump sells there for \$5.50, mine-run for \$3.50@\$3.75 and screenings for \$2.50. Arkansas semi-anthracite goes at \$6 for lump, \$3.50@\$4 for mine-run and \$1.50@\$2 for slack.

Conditions in Ohio

The situation in Ohio has been affected by the optimistic reports emanating from the camps of both operators and miners that there is not much danger of a strike April 1. Mild weather conditions put a damper on buying of both domestic and steam coals, which is confined largely to immediate requirements. Reserves in Ohio in steam grades are estimated at from 45 to 60 days. Retail dealers are not

How the Coal Fields Are Working

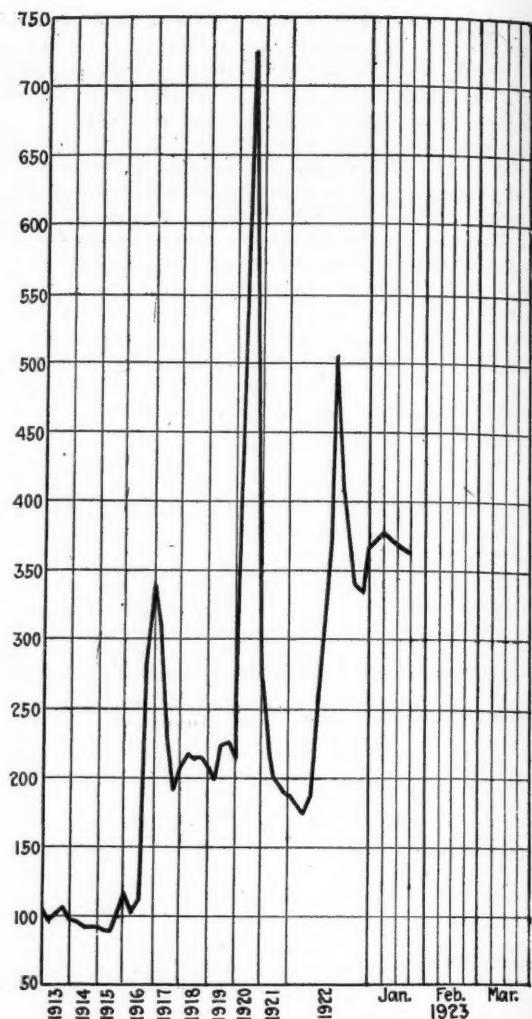
Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922	Sept. 5 to Dec. 30, 1922	Week Ended Jan. 6, 1923
U. S. Total.....	45.6	55.7	43.6	
Alabama.....	63.5	64.6	85.2	(a)
Somerset County.....	55.5	74.9	36.6	(a)
Panhandle, W. Va.....	55.3	51.3	57.3	60.3
Westmoreland.....	54.9	58.8	65.8	58.9
Virginia.....	54.8	59.9	55.7	55.3
Harlan.....	53.3	54.8	22.1	18.9
Hazard.....	51.7	58.4	16.4	16.7
Pocahontas.....	49.8	60.0	36.6	33.1
Tug River.....	48.1	63.7	28.8	40.3
Logan.....	47.6	61.1	26.2	31.3
Cumberland-Piedmont.....	46.6	50.6	32.0	45.6
Winding Gulf.....	45.7	64.3	30.4	41.0
Kenova-Thacker.....	38.2	54.3	42.4	(a)
N. E. Kentucky.....	32.9	47.7	28.4	30.8
New River.....	24.3	37.9	31.6	31.6
Oklahoma.....	63.9	59.6	59.1	55.2
Iowa.....	57.4	78.4	75.9	88.2
Ohio, Eastern.....	52.6	46.6	40.8	41.6
Missouri.....	50.7	66.8	76.3	92.7
Illinois.....	44.8	54.5	49.9	64.0
Kansas.....	42.0	54.9	55.9	65.7
Indiana.....	41.4	53.8	37.7	(a)
Pittsburgh†.....	41.2	39.8	41.2	53.8
Central Pennsylvania.....	39.1	50.2	53.4	50.2
Fairmont.....	35.3	44.0	35.5	44.9
Western Kentucky.....	32.5	37.7	32.5	(a)
Pittsburgh*.....	30.4	31.9	56.1	80.3
Kanawha.....	26.0	13.0	15.6	19.5
Ohio, southern.....	22.9	24.3	38.2	47.4

* Rail and river mines combined

† Rail mines

(a) No report



Coal Age Index 358, Week of Jan. 22, 1923. Average spot price for same period, \$4.43. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

heavily stocked. Pocahontas and smokeless grades are hard to get and West Virginia splints, Kentucky and Ohio coals make up the bulk of the tonnage.

In Cincinnati the fact that the storage piles have not started to build up indicates that all of the river coal is going to consumers. There has been a large number of rejections due to the reductions in values during the past ten days, both by-product and steam coals showing a reduction of 50c. a ton.

New River mines are securing a somewhat better car supply from the Chesapeake & Ohio but the improvement has not been sufficient to add materially to the total production of the district. Few mines are working more than two full days a week. Most of the coal produced is going to Tidewater and Eastern inland points due to the inability to secure equipment for western loading. Gulf production is on a limited scale owing to the inability of the Virginia Ry. to make any headway in materially increasing transportation facilities.

Losses in the Pocahontas region are usually heavy as a result of poor transportation facilities. Mines are shipping about 200,000 tons a week out of a possible production of 600,000 tons.

Mines in the Tug River territory are not getting out more than about 40 per cent of their normal tonnage, much of which is going to Western market.

Operations in the Kanawha region is being interrupted by influenza among the miners, some mines being forced

January 25, 1923

COAL AGE

201

to suspend operations for several days at a time. Approximately half of the present production is moving on contract. Steam coal for Western delivery in mine run grade commanded a price of \$3.25 to \$3.75, with by-product mine ranging about 25c. higher. Splint lump in Western market ranged in price \$5.50@\$6.

With improved transportation conditions on the Chesapeake & Ohio in northeast Kentucky it has been possible to load more coal but the output of the district is not over 34 per cent, or about 125,000 tons, a week. There is a steady demand for steam coals by industrial concerns who find it necessary to restock. Mine-run brings \$3.50@\$4, with lump and block at \$6@\$7.

Influenza interrupts production in the southwest Virginia region, but even with inadequate car supply the output is not averaging above 55 per cent. There is a strong market for all grades, with mine-run bringing about \$5.50 a ton.

The bulk of the tonnage from the Northern Panhandle mines is going to Eastern markets. Mine-run grades were quoted \$3.50@\$4 and prepared coals \$5.50@\$6.

In some parts of northern West Virginia the price of steam mine-run ranged \$3@\$3.35, in other sections \$3.50@\$3.75.

Atlantic Seaboard

There is generally less anxiety on the part of buyers in New England than a fortnight ago. Embargoes against New Haven territory have thrown an extra volume of spot coal all-rail for distribution over other lines, and prices have not hardened to the degree anticipated. Lower temperatures will also tend to increase water power for many of the textiles as well as several of the larger utilities, and this will remove a class of buyers that was prominent early in the month. Increased receipts from Hampton Roads with an occasional cargo from Welsh ports have been another factor in retaining prices about on last week's level. Steam users show less interest in spot coal and are much more inclined to await developments.

Favorable weather along the coast will mean a steady increase in receipts, especially from Hampton Roads, and there is already developing enough additional tonnage from Philadelphia and New York by the water route to make it self soon felt in reduced demands all-rail.

Navy standard coals are distinctly in better supply at the Virginia terminals. While car supply continues notably short on the Southern roads, service is more dependable and there is a somewhat diminished call for prepared coal West. The high range of spot prices, netting well over \$6 per net ton at the mines, is another reason for increased volume to Tidewater. Rehandling factors at Boston, Providence and Portland have realized \$11 and upward for Pocahontas and New River per gross ton on cars for inland delivery.

As an indication of car shortages on the roads serving Philadelphia it is interesting to notice that once more large users at Philadelphia are arranging for temporary supply by water from Hampton Roads. This movement shows no prospect of involving large tonnages but it has a certain significance. Higher prices at Hampton Roads have also had the effect of inducing more spot buying of selected Pennsylvania grades.

The situation in the North Atlantic market is easier and New York demand is slow. The number of cars at the local terminals remain close to 4,000. Much of the easiness is attributed to the increased shipments of anthracite to the New York market and the falling off in demand for substitutes. There were some cancellations reported principally of the screened coals.

Consumers closely watched the proceedings of the wage conference, although there was a feeling that there would be a settlement.

There was a stiffening of prices at Baltimore following colder weather and another breakdown in car supply.

Anthracite

Estimates of production of anthracite during the week ended Jan. 13 indicated an output of 2,113,000 net tons, an increase of 2.2 per cent in comparison with last week. Of this tonnage, New England received 3,217 cars.

Final returns on anthracite production in December, 1922, indicate a total output of 8,430,000 net tons, says the Geological Survey. This is the largest December production recorded. It was, however, only 45,000 tons more than in November and was 148,000 tons less than in October.

The production of anthracite in 1922 is estimated at 52,485,000 net tons, which is 45 per cent less than the 1921 production and 43 per cent less than the average annual production during the nine years 1913-1921.

Since the strike settlement production has averaged approximately 2,000,000 net tons per week and been at the rate of over 100,000,000 tons per year. Thus the output during the last quarter of 1922 amounted to 48 per cent of the total for the year.

Coke

The settlement of the strike in Connellsburg region had no apparent effect on production. About 2,000 men were affected by the action in calling off the strike.

The coal and coke markets remain firm, but there is no unusual demand for either fuel. The acute car situation is giving more support to the market than is the demand. Steam coal is selling at \$3 to \$3.25 with byproducts at \$3.50 and \$3.75. There is a steady demand for furnace coke both from the East and furnaces, which is supporting quotations of \$8.25 and \$8.50, with foundry coke selling at \$9.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 6, 1923.....	770,303	187,746
Previous week.....	711,200	173,378
Same date in 1922.....	599,433	135,522
<hr/>		
	Surplus Cars	
	All Cars	Coal Cars
Jan. 7, 1923.....	20,426	5,490
Dec. 31, 1922.....	14,981	3,651
	Car Shortage	
	73,285	34,243
	82,927	36,525

National Coal Directors Withhold Comment On Coal Commission Report

Following the quarterly meeting of the board of directors of the National Coal Association at the Waldorf-Astoria, New York City, Jan. 16, the board issued the following statement:

"In reply to requests of newspaper representatives for comment upon the preliminary report of the United States Coal Commission to Congress the board of directors of the National Coal Association states that any deductions made from the report as to the bituminous industry are manifestly premature and unfair to the commission, since the commission itself says that it has not had opportunity, as yet, to conduct such an investigation as would develop the necessary facts. The report is but a preliminary one and, as the commission says, is not intended to be conclusive.

"The commission is conducting an investigation, among other things, into matters relating to what is described as overdevelopment of the bituminous industry and says it will deal with that subject in a further report. The bituminous operators will submit data on this point to the commission.

"It may be stated, in passing, that the attitude of the industry, as expressed in its recent reply to the commission's letter directed to the industry, is that the law of supply and demand, if allowed to work, will adequately adjust any possible problem of overdevelopment. If the public will regularly place its orders for its coal supply, the miners remain at work, and adequate transportation facilities are provided to haul the mine output, no difficulty ever will be experienced in meeting the public necessity for bituminous coal. And when this situation obtains the public will never have any problem as to prices.

"High-price mines operate only when a coal shortage exists. They are unable to compete in the ordinary market. They open up only in emergency. Do away with the emergency through the consistent and regular ordering of coal, spreading it throughout the year, and the coal problem is so'ved, and to the advantage of the consumer."

Foreign Market And Export News

British Coal Output Resumes Upward Trend; Export Demand Is Active

British coal production in the first week of the year totalled 4,384,000 tons as compared with 3,428,000 tons for the previous week, an increase of 956,000 tons, according to a special cable to *Coal Age*.

Demand for export is active and the output is well sold up for January.

Operators are reported as being rushed with orders from the United States and Canada. France and Italy also are reported as heavy buyers. Much of this activity is attributed to the Ruhr Valley difficulties. Shippers, it is expected, will give preference to old customers.

South America, too, affords heavy business. Forty to fifty steamers are daily awaiting loading turns. East Coast demand is strong with heavy inquiries noted, including German. Prompt business is impracticable owing to the dearth of supplies. Every description is well sold for January.

Operators are in receipt of heavy orders from French railroads and large orders also have been received from German industries, which it is expected will be increased now that mining in the Ruhr Valley has stopped. The outlook for Welsh coal for the year is considered favorable.

Hampton Roads Situation

Business was duller at Hampton Roads, due to slump in demand for coal in the North. Coastwise business fell off to a very noticeable extent, though bunkers were holding well and export business showed little sign of picking up.

Prices had fallen off somewhat, due to the lack of demand and to a coincident increase in the flow of coal to port. This latter feature was particularly noticeable over the Chesapeake & Ohio, which was leading in supplies on hand. The market was firm, however, and a cheerful tone was over all.

The slump in business was regarded

as only temporary and shippers were making unusually strong efforts to build up new business based on the feeling that the car supply is showing signs of immediate improvement.

French Domestic Demand Recedes

Owing to the mildness of the weather, the demand for French domestic coals has become much less urgent. All classes of industrial coals of the Nord and Pas-de-Calais are in good demand.

Coke produced at ovens attached to collieries of the Nord and Pas-de-Calais is selling at the following prices, according to destination (sales through the Société des Cokes de Hauts-Fourneaux excepted):

Blast-furnace coke..... 115—123 fr.
Foundry coke..... 125—133 fr.

It now seems certain, after the Douai conference, that the miners of the Nord and Pas-de-Calais will defer to the desire of the owners and wait until next April for having their claim of an increase of wages examined again.

France produced in November 2,799,549 metric tons of coal, as against 2,824,488 metric tons in October. devastated mines of the Nord and Pas-de-Calais are included in this total for 728,020 tons. In January, 1922, the output of these collieries was only 580,726 tons.

Export Clearances, Week Ended Jan. 18, 1923.

FROM HAMPTON ROADS

For Canada	
Am. Schr. Frances L. Taussig, for Hamilton	1,119
For Cuba	
Br. SS. Berwindale, for Havana	7,651
Nor. SS. Marshall, for Manzanillo	1,213
For Italy	
Ital. SS. Brendon, for Porto Ferrajo	6,361
For West Indies	
Am. SS. Tachira, for Curacao	3,035

FROM PHILADELPHIA

For Porto Rico	Tons
Am. Schr. Rasspege, for Humacao

German Coal Production Improves

The German coal production in November shows, in spite of the comparatively low number of working days, an improvement compared with the previous month and with the corresponding month of 1921. According to the definite figures this production in 244 working days was:

Bituminous coal, 10,456,031; tons brown coal, 11,895,989; coke, 2,529,545; patent fuel: bituminous coal, 490,846; brown coal, 2,391,764.

Of the production of bituminous coal 8,272,479 tons or 80 per cent fall to the share of the Ruhr district, 767,793 tons to that of Upper Silesia, while the rest was supplied by the minor districts. As against November 1921 the production of bituminous coal is short by 1,250,000 tons, while that of brown coal has increased by approximately the same amount. This decline is due to the detachment of Polish Upper Silesia, which produced in that month 2,165,719 tons. The production of coke shows an increase of 180,000 tons against the corresponding month of 1921 and has for the first time surpassed pre-war figures, deducting therefrom the production of the alienated territories. The increase in the production of brown coal briquets amounted in November to 150,000 tons compared with November 1921. An extension of the existing briquetting plants is sorely needed in order to make the growing output of lignite more effective, but the large outlay required makes this almost prohibitive.

According to reports the standard of the November production was maintained the first two weeks in December.

Hampton Roads Pier Situation

	Jan. 11	Jan. 10
N. & W. piers, Lamberts Pt.	1,104	723
Cars on hand	74,245	49,647
Tons on hand	82,623	123,613
Tons dumped for week	13,000	8,400
Tonnage waiting		
Virginian Ry. piers, Sewalls Pt.	1,341	1,522
Cars on hand	75,550	86,160
Tons on hand	89,588	62,154
Tons dumped for week	1,850	15,000
Tonnage waiting		
C. & O. piers, Newport News	1,769	1,821
Cars on hand	95,200	100,775
Tons on hand	77,843	72,584
Tons dumped for week	8,240	10,280
Tonnage waiting		

Pier and Bunker Prices, Gross Tons

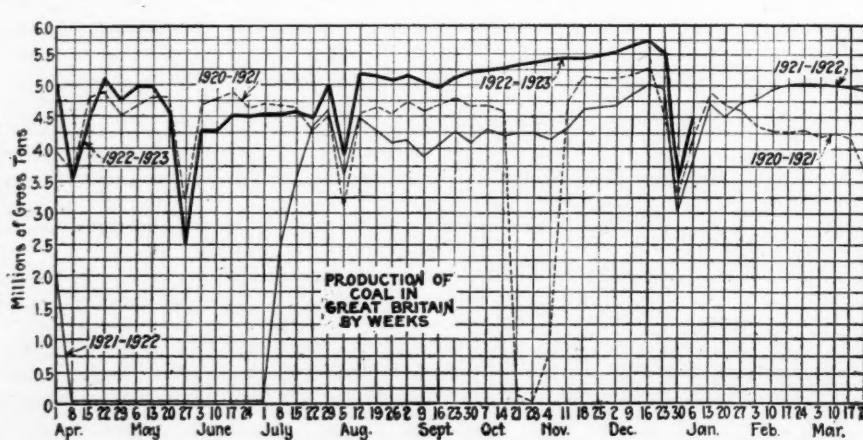
	PIERS	Jan. 13	Jan. 20†
Pool 9, New York...	\$8.25@ \$8.75	\$7.75@ \$8.25	
Pool 10, New York...	7.75@ \$8.00	7.25@ \$7.50	
Pool 11, New York...	7.25@ \$7.50	6.75@ \$7.00	
Pool 9, Philadelphia...	8.50@ \$9.00	8.25@ \$8.80	
Pool 10, Philadelphia...	7.90@ \$8.15	7.45@ \$8.00	
Pool 11, Philadelphia...	7.30@ \$7.65	7.20@ \$7.50	
Pool 1, Hamp. Roads...	8.50@ \$9.00	8.50@ \$8.75	
Pools 5-6-2 Hamp. Rds.	8.50@ \$9.00	8.50@ \$8.75	
Pool 2, Hamp. Rds.	8.50@ \$9.00	8.50@ \$8.75	
BUNKERS			
Pool 9, New York...	\$8.70@ \$9.15	\$8.10@ \$8.80	
Pool 10, New York...	8.15@ \$8.40	7.60@ \$7.85	
Pool 11, New York...	7.70@ \$7.90	7.10@ \$7.35	
Pool 9, Philadelphia...	8.70@ \$9.20	8.60@ \$9.05	
Pool 10, Philadelphia...	8.35@ \$8.60	8.15@ \$8.50	
Pool 11, Philadelphia...	7.60@ \$7.80	7.70@ \$7.85	
Pool 1, Hamp. Rds...	8.75	8.50@ \$8.75	
Pool 2, Hamp. Rds...	8.75	8.50@ \$8.75	

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations, by Cable to Coal Age
Jan. 13 Jan. 20†

Admiralty,	
large.....	28s. @ 28s. 6d. 28s. 6d. @ 29s.
Steam, small.....	17s. 6d. @ 18s. 6d. 18s. 6d. @ 18s. 6d.
Newcastle:	
Best steams....	24s. 6d. @ 25s. 26s.
Best gas.....	24s. 6d. @ 25s. 24s. 6d. @ 25s. 6d.
Best bunkers.....	23s. 6d. 22s. 6d. @ 23s. 6d.

† Advances over previous week shown in *bold type*; declines in *italicized type*.



January 25, 1923

News Items From Field and Trade

ALABAMA

Four miners were killed in an explosion in Dolomite Mine No. 1 of the Woodward Coal & Iron Co. near Birmingham, Jan. 10. The bodies of Frank Lewis, foreman, and three negroes have been recovered. The body of another negro was reported to be in the entry of the mine where the explosion, believed to be due to gas or accumulated dust, occurred. The mine is near the Woodward company mine where many persons perished in an explosion in November.

The Birmingham district will be included in the itinerary of the fact-finding commission, it is officially announced from Washington. All coal-producing centers will be visited by the commission.

Applicants for positions as mine foremen and firebosses in Alabama mines will appear before the State Board of Examiners on Jan. 22 to 25. Charles H. Nesbitt, chief mine inspector, is chairman of the board.

D. A. Thomas, formerly vice-president and manager of sales of the Montevallo Mining Co., has become associated with the United States Fuel Co. in the capacity of vice-president. William H. Weller, Jr., is president of the company, which has been engaged in a general brokerage and sales agency business for the past several years, the capital stock recently having been increased to \$25,000.

COLORADO

Colorado's production for November, 1922, was 1,000,554 tons compared to 835,235 tons of coal during November, 1921. The total production in Colorado from Jan. 1 to Nov. 30, 1922, was 8,841,103 tons, an increase of 354,398 tons over the production of the same period in 1921.

Although Colorado, now largely non-union, suffered less from coal strikes in 1922 than most of the states in the Union, it has been whispered about that **there may be serious trouble ahead in 1923.** All of these whisperings have been circulated following a visit of William Z. Foster, agitator and alleged member of the I. W. W. His unmoled speech on Soviet Russia to a gathering of radicals the last of the old year at the Painters' Hall in Denver gave rise to some worry in view of the fact that he was deported from the state during the coal strike last August. Foster returned to Colorado as soon as Governor William Sweet took office. The Colorado Rangers, active in preventing mine strike disorders last year, have practically dissolved under the new administration.

The Lackawanna Coal Co., of Denver, is taking over a lease on 400 acres of state school coal land east of the MacGregor mine in Routt County between Milner and Oak Creek, according to Horace W. Havens, mineral superintendent of the Colorado State Land Board. The Moffat tunnel activities have caused demand for leases in the Routt County coal district. The McNell Coal Co., operating the MacGregor mine, is extending its operations by running a slope into a large body of state school coal land to the southwest. Its new lease provides that the slope will enter the school land in two years. This mine has 1,500 ft. to tunnel.

Most of the coal mines in the state are working on an average of three days a week. The ten Colorado Fuel & Iron Co. mines at Trinidad are working full time since the opening of the steel rail mills at Pueblo, nearly three weeks ago.

ILLINOIS

W. X. Kavanaugh has resigned as president of the Fifth and Ninth District Coal Operators' Association. He presented his resignation several months ago and it was recently accepted by the board of directors. Mr. Kavanaugh says his retirement was caused by the pressure of private business. The association elected as its president Dr. C. H. Krause, vice-president and general manager of the Willis Coal & Mining Co. O. L. Lumaghi has been chosen secretary. Dr. Krause has for many years been secretary of the association and in close touch with the conditions surrounding the industry in general.

J. O. Langley has opened a new strip mine on the J. S. Hopkins farm near Roodhouse.

The Gilchrist-Schuler Co. has options on 1,200 acres of coal lands northwest of Dahinda, a few miles from Galesburg. The land is adjacent to the Santa Fe tracks. The company has drilled 125 ft. and has touched two veins of coal. Drilling will be carried on to a 400-ft. depth. The land is ideally situated for a coal mine, as the river skirts one side of the tract and the railroad another. It is understood that the Santa Fe has been interested in procuring a mine site on its Illinois lines for some time.

The Illinois Coal & Coke Corp., of Chicago, has changed its name to the Illinois Coal Corp. It has increased its capital stock from \$1,000,000 of no par value to \$10,000,000 and classified the shares.

Carl Scholz, now of Charleston, W. Va., was in southern Illinois recently on business. He spent the greater portion of his time at the mine of the Valier Coal Co., Valier, where he was formerly located.

Eugene McAuliffe, until recently president of the Union Colliery Co., was a Chicago visitor early in January, explaining to important coal men and railroaders his plan for better distribution of cars to mines—a plan now getting consideration by the Interstate Commerce Commission.

The output of coal in Illinois in 1922 was 15,000,000 tons below that of 1921, according to the report of the State Department of Mines and Minerals. The 1,133 mines produced 63,276,827 tons last year, as compared with 78,339,082 tons in 1921. The coal strike of last summer was the cause of the decrease. The number of men employed was 98,094 and the average number of days worked was 134. The report showed 159 men were killed in the mines, as against 222 in 1921. There were 3,879 non-fatal accidents. Of the total tonnage mined, approximately 19,000,000 tons was consumed by railroads, about 38,000,000 shipped to market and 319,000 tons used locally.

A reward of \$1,000 has been offered by the management of the Perry County Coal Co. for the arrest of the vandals who damaged the tipple and cages of their mine at Cobden. The hoisting machinery was started during the night and the cages run up and down until one became lodged in the rigging of the tipple which was considerably damaged. The other cage was forced down to the bottom of the shaft, where it was crushed. A valve on one of the boilers was opened, draining all the water. Fortunately, the fire was low and the boilers did not explode. Efforts also were made to demolish the electric generators, but a disconnected wire frustrated this. The company is at a loss to explain these acts of vandalism, as there has been no trouble at Cobden or at any other of the company's plants.

Announcement has been made that the mine of the Lowden Coal Co. at Pinckneyville, will be opened in the near future. Some time ago the mine was shut down because of failure to meet its payroll, but full settlement has since been made.

The first coal shipment from the famous Lester strip mine at Herrin since June 21, last year, was made late in December. The coal was shipped by the Caloric Coal Co., now owner and operating the mine where the Herrin massacre took place June 22, having purchased the strip from the Southern Illinois Coal Co., Chicago, of which W. J. Lester was president. The plant has been somewhat rebuilt, new tracks laid and the shovels, which were dynamited by the strikers last summer, have both been repaired and put into operation.

Extensive drilling operations are now being carried on in the vicinity of Vergennes, Jackson County, by the Taylor Coal Co. It is stated that a vein varying from 6 ft. to 8 ft. in thickness is found in the drillings. The deposit is known as the Big Muddy field, being only a few miles north of the Big Muddy coal fields at Murphysboro, now practically worked out. The tract being drilled by the Taylor company is near the Illinois Central and Missouri Pacific roads, and a mine sunk there would have the advantage of being served by both roads.

INDIANA

The Knox Coal Mining Co. has taken over the business of the Worth-Huskey Coal Co. and the Ridge Coal Co., both of Chicago, and the Carl Fletcher Coal Co., of Indianapolis. Both the Worth-Huskey Coal Co. and the Carl Fletcher Coal Co. have been sales companies and the Ridge Coal Mining Co. has been operating the Knox mine at Bicknell.

Charges of muleting the city of Chicago involving Mortimer B. Flynn and the Pottinger-Flynn Coal Co., of Chicago, are now being further investigated by a grand jury which has just discovered that Flynn made an \$18,000 payment to Dr. William H. Reid, Commissioner of Public Service, said to have been a campaign contribution for Mayor William Hale Thompson's candidacy for re-election and that the Flynn company was granted by Reid a monopoly on the business of selling coal to Chicago, that only a small portion of it was on contract and the rest at "special rates," and a number of other significant facts. Flynn, who permitted his treasurer to be sentenced to jail rather than show the company's books, is now preparing to open those books to the investigators, for the grand jury probe into financial irregularities in Chicago's school department has widened and deepened astonishingly.

The Dodge Sales & Engineering Co., Mishawaka, which has for the past eight years been operating as the selling subsidiary of the Dodge Manufacturing Co. and Dodge Steel Pulley Corporation, has now been consolidated with the parent company, **Dodge Manufacturing Corporation**, which was organized and began business last July. The Dodge Manufacturing Corporation is the largest manufacturer of power-transmitting appliances in the world and is equipped to furnish stock products such as iron, steel and wood pulleys, pillow blocks, hangers, etc., as well as complete rope drives, fly-wheels and water wheel harness especially designed and constructed to meet the requirements of every industry. Distribution of Dodge products is made through fourteen branch warehouses in power-using centers, as well as hundreds of representative mill suppliers and jobbers. The Dodge Manufacturing Corporation also controls the Dodge Manufacturing Co., of Canada, Ltd., with head offices and works at Toronto, Ontario, and sales office at Montreal, Que.

A bill introduced in the House of the Indiana Assembly which would make it unlawful to remove coal from the earth by the strip-mine process, unless refuse material removed from the excavation be filled back and leveled up to conserve lands and surface for agricultural purposes, had a short life. Two days after its introduction action upon it was postponed indefinitely, on recommendation of the committee. The bill provided for a fine of from \$500 to \$3,000 and imprisonment of not more than one year for violation.

Indiana miners expect at once to begin a drive on the new Legislature in the interest of re-enactment of a shotfirers' law which will meet the objections to the law recently held unconstitutional by a decision of the State Supreme Court. The mine workers' organization contends that the contract between the United Mine Workers of America and Indiana operators, in effect until March 31, provides for the employment of shotfirers by the operators, and the miners will insist that this contract be carried out, regardless of the court opinion. According to the miners and operators, the only point involved in the controversy is the expense of maintaining a force of shotfirers. It was contended by friends of the measure at the last Legislature that the employment of special men for this line of work would create a body of experts in the use of explosives, making the work of miners safer.

IOWA

Tony Kauzlarich has purchased the Scott farm near Chariton, and has sunk a slanting shaft 175 ft. in depth and has struck coal at a depth of 100 ft. The shaft is down to the slate and rock. Borings have been made and it is thought the vein will measure not less than 4 ft. In time there may be some large coal mines south and northeast of Chariton as well as at Lucas.

Mine No. 4, at Williamson, near Chariton, broke records for hoisting coal recently when 1,858 tons were hoisted in one day at the rate of more than four tons per minute for the seven and one-half hours. No. 4 mine will soon be one of the foremost mines in Iowa as far as equipment is concerned. There are now being installed three mining machines which will increase the output to a large extent.

KANSAS

A local company has been formed to develop the coal field discovered last spring in Clark County, 16 miles southwest of Bucklin. A syndicate has charge of the work. H. P. McCausland is trustee. The field is said to cover 20,000 acres of land.

The Tulsa County Coal Co., capital \$50,000, has been chartered by B. C. Connor, H. O. Tallman and E. E. Henning. They own a large acreage.

Governor Jonathan Davis, newly elected and a Democrat, in his inaugural message to the state Legislature, declared against the Industrial Court law of that state, as hobby of his predecessor, Governor Henry Allen. The Industrial Court has played a large part in recent coal history of Kansas.

Relief from the coal-car shortage in the southeastern Kansas field within a few weeks was predicted by H. H. Brown, superintendent of the St. Louis & San Francisco R.R., testifying before Clyde M. Reed, chairman of the Public Utilities Commission, at Pittsburgh. He said government inspectors had kept many locomotives tied up awaiting inspection. The Public Utilities Commission began an investigation of the coal-car situation in Kansas Jan. 3, inspired by complaints by dealers and operators of delayed deliveries as a result of weak transportation. One operator said he had received one car since Oct. 1. Another got 13 in six weeks. It was declared that the car shortage was the worst in history.

KENTUCKY

The Big Sandy field of northeastern Kentucky, in which the Northeastern Kentucky Coal Operators' Association holds sway, showed an increase of about 500,000 tons production in 1922, as compared with 1920, although the ratio of output to potential capacity showed a loss of about 3 per cent over 1920, due to the fact that potential capacity had been materially increased. At that the field made a nice showing. A report received from Ashland says in part: "Out of a potential production of 15,354,175 tons for 1922, 6,056,227 tons were actually produced. In 1920, 5,514,359 tons were produced."

Nearly every coal-carrying road operating in Kentucky has placed orders for additional coal cars during the last few months. The B. & O. is placing order for 5,000.

Details of an alleged plan whereby the mines of the Northeast Coal Co. near Paintsville were to be dynamited and the carrying into execution of this plan with the consequent death of two miners, were revealed when William Spears, one of the men under arrest, turned state's evidence at his examining trial. The explosion in the mines occurred June 27, 1922. About 40 men have been arrested. The motive of the plot against the mines has not been made public.

The Scanlon Thompson Coal Co., capital \$20,000, has been chartered by Sallie J. Thompson, C. W. Thompson and J. C. Hanna. The debt limit is \$50,000. The company takes over the old Scanlon Coal Co. in Louisville, and will do a retail and wholesale business. It will handle eastern and western Kentucky coal, featuring product of the Jim Thompson Coal Co., Drakesboro, western Kentucky. The company has a good local business, calling for over 100 tons of steam coal daily in addition to its domestic, and has been jobbing six or seven cars a day.

Official result of the election of officers of the United Mine Workers of District 23 were given out by union officials at Madisonville as follows: President, Lonnie Jackson, Central City; W. D. Duncan, Central City, member international executive board; Wes Ames, Central City, vice-president; H. H. Vincent, secretary-treasurer; auditors, S. J. Watson, Madisonville; J. H. Johnson, Nelson, and Robert Calloway, McHenry; tellers, J. W. Blackburn, McHenry; W. B. Swope, Morton's Gap, and Rich Russell, Providence. R. C. Owen, McHenry, delegate to State Federation of Labor. Eight district board members were elected as follows: W. C. Hobgood, Henderson; L. G. Smith, Drakesboro; R. M. Nance, Providence; James L. Dunlap, Earlington; E. M. Harden, McHenry; John Duncan, Central City; Roy Hobbs, Baskett; Charles Smith, Cleaton.

F. M. Sackett, of the Speed interests, operating a number of Kentucky mines, jobbers' offices and the Byrne & Speed Coal Co., large retailers, with several local yards, was re-elected president of the Louisville Board of Trade on Jan. 10 at the annual meeting. It is his third term as president, he having resigned the first term to enter federal service during the war, as a dollar-a-year man.

Louisville shippers and the coal interests are much pleased with the announcement of the purchase of control of the C. & O. by the Van Sweringen interests of Cleveland. The C. & O. enters Louisville from Lexington over the L. & N., but is a big factor in the Big Sandy coal fields of the state, and it is believed that under the Van Sweringen control and working in conjunction with the Nickel Plate and other lines under the same control the road will show more rapid and better development.

The Chavies mine of the Bermuda Coal Co., at Chavies, was opened recently. This mine is on the L. & N. R.R.

MARYLAND

The Brydon Brothers Coal Co. has been incorporated at Cumberland, with a capital stock of \$800,000. The incorporators are Harry G. Fisher, Harold K. Wood and D. Lindley Sloan.

MINNESOTA

The Minnesota State Legislature, which has just convened, will receive a recommendation that dealers in coal, both wholesale and retail, be licensed and be required to make monthly reports of their stocks on hand and the prices asked. The purpose is to keep tab on stocks as well as prices and to watch for profiteering.

Although the Fuel Commissioner has retired from his duties, the local committee in Minneapolis, formed to aid in the work, will continue to function.

Carl Jaeger, of St. Paul, president of the Lignite Industries Corporation, has gone to Germany, to approve machinery for extracting chemicals from lignite in Texas and North Dakota. The machinery has been ordered for some time and will not be shipped until approved. One lot will go to Greenville, Texas, and the other to some unnamed point in North Dakota. The machines are for refining lignite, extracting byproducts from coal tar as well as producing the coal tar itself.

The United States Chamber of Commerce has been having a survey made in these cities as well as elsewhere, to establish the exact needs of the Northwest as to coal for next winter.

A South St. Paul dealer who was convicted of giving short weight on three sales of coal, was sentenced to 90 days in jail, the heaviest sentence ever given for short weight in this state.

MISSOURI

The Kolb Coal Co., of St. Louis, has just purchased some 30-yd. western dump cars and a 6-wheel switch engine for use at its mines for storage purposes.

Robert Collett, for the last few years in the fuel department of the New York Central lines at New York City, assumed the duties of fuel agent of the Frisco system at St. Louis Jan. 15, succeeding J. C. Bryan, transferred to the mechanical department in charge of the shops at St. Louis. Mr. Collett was with the Frisco prior to the war under Eugene McAluliffe.

C. C. Wall, of Detroit, has been assigned to St. Louis by the I. C. C., succeeding C. D. Thomas. The business and coal bureaus of the service section are demanding a permanent office at St. Louis.

Articles of incorporation have been filed as follows in the office of Secretary of State Charles U. Becker: Star Coal Co., Kansas City; to mine, prepare for market, transport and sell and deal in coal and other minerals incidentally developed; capital, \$50,000 and 1,000 shares no par value; incorporators: S. S. Serat, M. H. Serat, G. B. McPherson, E. R. Dusky and A. F. Evans. Midland Valley Coal & Material Co., Overland; to buy and sell feed of every kind, lime, sand, cement, lumber, iron, steel and all kinds of building and construction material, ice, coal, coke, wood and every kind of fuel and do a general construction and building business; capital, \$25,000; incorporators, M. J. Tracy, W. P. Pohrer and M. J. Mohan. American Ice Co., Kansas City; to do a general mercantile business, wholesale and retail or both; to buy and sell coal and wood; manufacture, buy, sell ice, refrigeration and cold storage; capital \$25,000; incorporators, H. L. Burk, A. J. Stewart and H. F. Roosa.

NEW YORK

William A. White has resigned from the editorial staff of *Coal Age* and become associated with the Morrow Callahan Coal Co., recently organized, with offices in New York, Pittsburgh and Cincinnati. For the



WILLIAM A. WHITE

last two and a half years Mr. White has been market editor of *Coal Age*, having joined its staff Aug. 1, 1920. He will be in charge of the paper and pulp-mill department of the Morrow Callahan company, with headquarters in Cincinnati. He has had long experience in the coal trade, having started with his uncle, C. P. White, in the Carnegie Coal & Dock Co., some ten years ago. He also has been engaged in the coal trade in the Northwest, Ohio and the South, and enjoys a wide acquaintanceship in many other parts of the country.

The Joint Committee on a National Museum of Engineering and Industry appointed by the four Founder Engineering Societies of United Engineering Society, 29 W. 39th Street, New York, is composed of Edward D. Adams and Charles L. Clarke, of the American Institute of Electrical Engineers; Frederic A. Delano and Dr. George F. Kunz, of the American Institute of Mining and Metallurgical Engineers; Clemens Herschel and Nelson P. Lewis, of the American Society of Civil Engineers, and Reginald Pelham Bolton and Holbrook Fitz John Porter, of the American Society of Mechanical Engineers, the latter acting as chairman. This committee in co-operation with the National Museum of the Smithsonian Institution at Washington, D. C., is formulating a plan for a great National Museum of Engineering and Industry similar in character to the foreign museums, especially the Science Museum at South Kensington, London, England; Conservatoire des Arts et Métiers at Paris, France, and Deutsches Museum at Munich, Germany. The co-operation has been secured of the Federated American Engineering Societies and of the leading industries. It is expected that every engineer and industry in the country will eventually join in the development of this educational project.

NORTH DAKOTA

Tests of the use of North Dakota lignite for industrial and commercial use are to be made soon. The lignite operators propose an intensive campaign on behalf of their product.

The Legislature of North Dakota set Jan. 16 as a day devoted to an intensive study of the natural resources of the state, aside from agriculture, and especially in coal and clay deposits.

OHIO

Robert Farmer, vice-president of Subdistrict No. 5 of the Ohio Division, United Mine Workers, has been acquitted of the charge of first degree murder in connection with the killing of John I. Majors, a non-union miner, at New Lafferty last June.

The Columbus Board of Purchase opened bids Jan. 17 for 7,500 tons of nut, pea and slack for the municipal light plant; 3,500 tons of the same grade of coal for the water works department and 2,000 tons of the same for the garbage-disposal plant. The Boblo Coal Co., Pittsburgh, bid \$2.95 f.o.b. mines for the entire tonnage; the New York Coal Co., Columbus, bid \$2.75 for 7,500 tons for the light plant; the F. M. Spencer Coal Co., Columbus, bid \$2.85 for 3,500 tons, and the Pennsylvania Coal Co., Columbus, bid \$2.75 for 2,000 tons for the garbage-disposal plant. The contract probably will be awarded soon.

The Monaco Coal Mining Co., of Roby-ville, has been chartered with a capital of \$100,000. Stockholders are Oliver Monaco, Domenick di Rienzo, Jesse Beck, Sieto Ferrusi and Juliette Monaco.

The County Commissioners of Columbus have awarded the contract for 3,500 tons of mine-run for Memorial Hall, the County Infirmary and the Court House to the Colonial Coal & Supply Co., at \$5 per ton delivered on the infirmary switch and \$5.95 per ton delivered at the Memorial Hall and the Court House. This is Cambridge coal and is \$1 per ton more than the bids on Hocking.

The Hisaylania Coal Co., of Columbus, which has been operating mines at Gloucester, has taken over the selling of the coal produced by the Penn Coal Co., of Crooksville; the Piney Fork Coal Co., of Piney Fork, Jefferson County, and the Panhandle Collieries Co., also of Jefferson County, all of which are controlled by the same interests. Formerly all of the producing companies maintained sales organizations. J. W. Blower is president and E. W. Blower, secretary of the company.

The Cincinnati Coal Mining Co., owner of a coal lease in Athens County, was directed by the Franklin County Common Pleas Court to pay royalties in the sum of \$2,575 to the owners of the fee, although no coal had actually been mined in months. This royalty was paid until March, 1920, when the company gave notice that it would no longer be bound by the terms of the lease.

An attachment of \$3,149.43 in the hands of H. D. Everett, trading as Western Coal Co., sued out by the plaintiff in the suit of the Tribbey Coal Co. vs. the Kanawha Valley Coal Co., was discharged when the defendant filed bond for \$8,500 in the U. S. District Court in Cincinnati. District Judge John Weld Peck made an order directing Everett to pay the money in his hands over to the defendant.

OKLAHOMA

The Oak Ridge Coal Co., capital \$200,000, has been organized by Vince Davis, Ray Morgan, James Hilling and others to sink a mine at Red Oak.

The distance a machine crew shall move coal cutting machines within a mine without additional pay was established at 900 ft. by W. L. A. Johnson, commissioner of the Southwestern Coal Operators' Association, and John P. White, former International president of the United Mine Workers, at a conference in Kansas City, Dec. 27. If the distance exceeds 900 ft. the men will be paid for the actual time required to move the machine, at day-wage scale. It was a dispute over this question that resulted in 800 miners in six mines of the Crowe Coal Co. in the Henryetta (Okla.) field walking out Oct. 23. They returned to work Nov. 13, pending a settlement.

PENNSYLVANIA

Consolidation of numerous individual coal interests in Indiana, Jefferson and Armstrong Counties into a corporation capitalized at \$100,000, fully subscribed, under the name of the Punxiana Coal & Coke Co., with headquarters in Indiana, Pa., has been accomplished. The new company represents the consolidation of the Rinn, Ritter, Winslow, Sutter, Snyder and Lorenzo interests into a sales agency to market the product of fourteen mines formerly owned and operated by the individual firms. The Punxiana company now has a daily output of more than 3,000 tons. With the completion of present plans the production will be practically doubled. The plans call for the operating of the present operations and the development of new mines. The incorporators are Lafayette F. Sutter, J. Floyd Rinn, Harry A. Snyder, Dr. Daniel Ritter, W. H. Ritter, C. Kempton Sutton, all of Indiana, and E. H. Winslow, Dr. F. A. Lorenzo and J. H. Ritter, all of Punxsutawney. Dr. Daniel Ritter is president and Harry A. Snyder treasurer of the new company. Mr. Snyder recently resigned as general manager of the Savans Collieries Co. The mines are located on the lines of the B. R. & P., Pennsylvania and B. & O. The new company will control 13,000 acres of unmined coal in the three counties and include the Upper and Lower Freeport, C Prime and Miller veins. There will be a branch office in Punxsutawney under the direction of E. H. Winslow and there will be sales representatives in Eastern cities.

The Western Pennsylvania Division of the National Safety Council is holding a series of winter meetings on the subject of "Safety in Mining" with Messrs. A. R. Pollock, J. T. Ryan, W. F. Affelder and Francis Feehan supervising the course, which proves very interesting.

Richard Maize, president of the Coal Mining Institute of America, was a recent Pittsburgh visitor.

Edward T. Devine, of New York, a member of the United States Coal Commission, spent two days in Johnstown recently. While there he met John Brophy, president, and James Marks, vice president, of the U. M. W. He was also in conference with A. B. Crichton, Harry J. Mehan and other operators. He was on his way west, and the object of the visit was to get into personal touch with facts and conditions in the central Pennsylvania field.

Governor Pinchot has named Joseph J. Walsh, a mine inspector of Wilkes-Barre, as chief of the Department of Mines to succeed Seward E. Button, Wyoming. The salary is \$6,000 a year and the term of the new chief began Jan. 16 with the opening of the new state administration. In announcing the appointment the new Governor said: "Mr. Walsh was selected purely because he is the most efficient and competent mine inspector in Pennsylvania. Politics had no part in his selection and should have none in a case like this where the lives of men are at stake." The new chief of mines was born at Pittston in 1874. He entered the mines as a door boy, attending night school in the meantime. He went to the Mansfield State Normal School for two years and then returned to the mines, working at various occupations. He qualified himself in a knowledge of mining engineering, ventilating engineering and chemical engineering in a correspondence school. Mr. Walsh has recently been mine inspector in the Fourteenth Anthracite district of Pennsylvania, a position he held for eighteen years. During 1908 he established the Mining Vocational School at Nanticoke, and has been its supervising principal. The school was started with twenty students and developed into a general school with 1,300 pupils. He is the author of a book entitled, "Physics and Chemistry of Mining and Mine Ventilation."

The American Coke Corporation, of Pittsburgh has purchased the abandoned Struthers plant of the Struthers Coal & Coke Co., of Cleveland, Ohio, located at Fairbanks, Fayette County. The houses at this plant will be used in connection with the Orient plant of the American Coke Corporation, at Orient, near by, and the equipment that is usable will be moved to the various plants of the American Coke Corporation as needed.

The annual report of the State Workmen's Compensation Bureau for 1922, just issued by Clifford B. Connelley, Commissioner of Labor and Industry, shows there were 146,255 accident reports received, an increase of 6,058 for the year as compared with 1921. Compensation incurred last year totaled \$10,853,344, the compensation for fatalities being \$5,062,490, for personal disability, \$2,226,364 and for temporary disability, \$2,564,490. The effect of the mine and rail strikes resulted in a decrease in accidents during the summer months in public service and mine reports. In 1921 there were 904 fatal and 49,852 non-fatal accidents in the mines while in 1922 there were 808 fatal and 35,804 non-fatal accidents reported from the mines.

More than \$2,000,000 of the estimated \$3,250,000 due the state in anthracite coal taxes for 1921 has been paid into the State Treasury. Among the recent checks received were about twenty from river coal-dredging companies. These represent about one-half of the companies that reclaim anthracite from the rivers in the eastern part of the State. Some payments were made under protest, the companies contending that they are not mining coal. In all, seventy-five of the 230 companies subject to the tax have paid. The largest single payment has come from the Lehigh Valley Coal Co., whose check was for \$285,665.65. Cox Brothers & Co., Inc., recently paid \$63,394.76. Blanks for the reporting of the amounts of anthracite produced and the assessment values of 1922 have been sent out and are returnable by Feb. 1.

The following bituminous coal companies were incorporated at the State Department at Harrisburg recently: George H. Foster Coal Co., mining and producing coal and manufacturing coke, Pittsburgh, capital \$25,000; treasurer, E. E. Beardsley, Point Marion. Incorporators: George H. Foster, Pittsburgh; E. E. Beardsley, Point Marion, and H. E. Hackney, Uniontown. Mon-Yough Coal Co., mining coal and manufacturing coke, Pittsburgh, \$50,000, W. F. McNaugher, treasurer. Incorporators: W. F. McNaugher, R. E. Moore and A. J. Fersch, Pittsburgh. Phoenix Coal & Coke Co., Pittsburgh, dealing in coal lands and operating them, \$10,000. Harold C. Schade, Crafton, treasurer. Incorporators: Harold C. Schade and R. C. Schade, Crafton, and Haven V. Wolf, Wilkinsburg. Dunlap Coal

Co., Claysburg, mining, preparing and shipping coal and fireclay, \$25,000; Fred S. Dunlap, Claysburg, treasurer. Incorporators: Thomas N. Kurtz, Hollidaysburg; Louis G. Kurtz and Fred S. Dunlap, Claysburg. George Coal Mining Corporation, mining, buying, preparing and shipping coal; Hastings, \$75,000; George A. Clark, Hastings, treasurer. Incorporators: L. S. Clark, Cherry Tree; George A. Clark and A. S. Slater, Hastings. Wheaton Coal Co., mining, selling and dealing in coal, leasing, buying and selling coal lands; Philadelphia; \$30,000; Guy L. Wheaton, Philadelphia, treasurer. Incorporators: Guy L. Wheaton, J. G. Allspach, Jr., Philadelphia, and W. Elbridge Brown, Clearfield. Burleigh Coal Mining Co., mining, operating and leasing coal lands; Philadelphia; \$50,000; Vance H. Burtner, Osceola Mills, treasurer. Incorporators: Vance H. Burtner, Harriett L. Burtner, Philadelphia, and Joseph W. Mills, Philadelphia. Broad Top Coal Co., mining coal and manufacturing coke, P. O. Six Mile Run, Pa., \$250,000; J. Orville Hoover, Woodbury, treasurer. Incorporators: John L. Longnecker, George W. Clouse and G. C. Imler, Woodbury.

RHODE ISLAND

The New England Coal Co., Woonsocket, has recently incorporated under the laws of Rhode Island, to engage in the coal business, with a capital stock of \$30,000. The incorporators are Albert A. Hudson, George M. Rex, and Harry E. Davis, all of Woonsocket also.

UTAH

Judge Hansen has denied motion of coal operators and lumber dealers to quash indictments returned by the district grand jury last autumn, following charges of price fixing. Date for trial has not been set yet. Most of the big companies in both industries are involved.

The Utah Products Co. is the name of a new Utah corporation which has filed articles showing a capital of \$100,000. The idea of the promoters is to get a maximum value out of Utah's coal mines, reduce the price of all fuel in the state, and incidentally, to solve Salt Lake City's smoke problem. Patent rights covering the whole of the United States have been taken out, although, for the time being at any rate, the activities of the concern will be confined to Utah. The process is the work of years of labor on the part of J. C. Fenton, a former instructor in chemistry at the University of Utah. It is asserted that the coal men were willing to take over the project, but that the exclusive rights they demanded were not granted.

The Spring Canyon Coal Co., operating the Spring Canyon mine in Carbon County, has been taken over by James B. Smith and associates, of San Francisco. The company has a capital of \$1,000,000. J. William Knight, a resident of Provo, was president and general manager. He will continue to be associated with the company as vice-president. J. A. Stallings will remain as sales agent. James B. Smith acquired an interest in the Knight company a few years ago and has since been selling the coal on the Coast through an organization at San Francisco known as the King Coal Co. The Spring Canyon company was organized in 1912 by "Uncle" Jess Knight, Mr. Knight's father and has been successfully operated.

The Columbia Steel Co. has filed articles of incorporation showing \$20,000,000 capital. Plants of the company will be built in Utah County between Provo and Springville. The Pacific Steel Co. also may locate there.

WEST VIRGINIA

The Consolidation Coal Co., of Fairmont, W. Va., announces the appointment of George W. Hay as general manager of their Elkhorn division, which position was left open by the death of John G. Smyth. It will be recalled that Mr. Smyth was killed Sept. 21, 1922, by a fall of slate in a small mine, of which he was part owner, but not the property of the Consolidation Coal Co. Mr. Hay has had charge of the McRoberts operations of the division, and has acted unofficially as general manager up to this time. By promotion H. S. Carpenter has been appointed general superintendent and has charge of the McRoberts operations. John F. Daniels, who formerly was superintendent of 204 and 205 mines, has become assistant general superintendent, and James L. Evans, formerly mine boss of 204 mine, is now superintendent of 204 and 205 mines.

D. A. Reed has been appointed general manager of the West Virginia division of the Consolidation Coal Co., **C. H. Tarleton** being the general manager of that division. Promotion of Mr. Reed has also meant the promotion of five other employees of the company. The office of assistant general manager was created, as of Jan. 1, because of the ever increasing duties devolving upon the general manager of the division. Mr. Reed has been with the company for more than 20 years, having entered its service as a messenger boy. **W. J. Wolf**, who has been associated with the company since 1915, has succeeded Mr. Reed as superintendent of the Monongah mines. **F. H. Brooks**, who entered the service of the company as a trapper boy, has been promoted from the post of superintendent at the Carolina mine to Idamay to succeed Mr. Wolf. Mr. Brooks has been succeeded as superintendent at the Carolina plants by **R. H. Kann**, now superintendent of the Wyatt plant of the company. Mr. Kann entered the service of the company as a miner. **E. B. Courtney** has been promoted from the post of superintendent of mines Nos. 21 and 91 at Gypsy to the position as superintendent at Wyatt, succeeding Mr. Kann. **I. W. Robinson**, who has been with the Consolidation for 20 years, became superintendent of mines 21 and 91 at Gypsy.

Judge J. B. Sommerville, in the Circuit Court of Brooke County, has sentenced **Peter Radakovitch** and **Teddy Aranski**, of Avella, Pa., to serve ten years in the West Virginia penitentiary—the maximum sentence—following their conviction on the charge of conspiracy in connection with the attack on the Cliftonville mines last summer. Appeals will be taken to the Supreme Court of West Virginia. The defendants mentioned above were the first two to be tried on the conspiracy charge. There are more than 200 other miners who will be arraigned on similar charges. It was in the defense of the Cliftonville mine that Sheriff H. H. Duvall, of Brooke County, was killed.

The following West Virginia coal companies have increased their capital stock in the amounts named: **Pemberton Fuel Co.**, of Mt. Hope, from \$100,000 to \$200,000; **Prince-Wick Coal Co.**, of Mt. Hope, from \$150,000 to \$300,000; **J. E. Long Coal Co.**, of Clarksburg, from \$100,000 to \$150,000; **Tierney Mining Co.**, of Pocahontas, from \$150,000 to \$450,000; **Long Fuel Co.**, of Clarksburg, from \$75,000 to \$350,000; **Costanzo Coal Mining Co.**, of Wheeling, from 8,000 shares to 20,000 shares without par value; **J. E. Long Coal Mining Co.**, of Clarksburg, from \$25,000 to \$100,000; **Interstate Fuel Co.**, of Clarksburg, from \$50,000 to \$100,000. The **Norfolk & Chesapeake Coal Co.**, of Columbus, Ohio, has been authorized to increase its capital stock from \$100,000 to \$200,000. The **Elk Ridge Coal & Coke Co.**, of North Fork, has been granted authority to reduce its capital stock from \$150,000 to \$75,000.

In addition to the usual quarterly dividend of \$2 a share, the directors of the **Island Creek Coal Co.**, have declared an extra dividend of \$5 a share.

Coming Meetings

Northern West Virginia Coal Operators' Association will meet Feb. 13 at Fairmont, W. Va. Secretary, G. S. Brackett, Fairmont, W. Va.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Feb. 19-22, 1923, at the Engineering Societies Building, New York City. Secretary, F. F. Sharpless, New York City.

Traffic News

A saving of approximately \$1 per ton to retail dealers in interior Iowa points on anthracite shipped is seen in a decision handed down by the I. C. C. whereby the roads must route such coal into Iowa at Class D rates. The decision was made following a hearing of the case held last September in Des Moines. The case grew out of the railroads suspending the Class D rates without permission of the I. C. C. This permitted them to charge from 75c. to \$1 per ton more on hard coal from Eastern points into Iowa.

The Coal, Coke and Iron Ore Committee, Central Freight Association Territory, announces a public hearing, 10 a.m. Feb. 1 to consider cancellation of rates on coke, coke ashes, coke breeze and coke dust, in carloads, to Moline, Rock Island, Ill., Davenport, Iowa, and Omaha, Neb., in con-

The sum of \$250,000 is being expended by the **Ben Franklin Coal Co.** at its Parkersburg docks for the construction of river transportation equipment, which will include thirty-five timber barges to be used in the transportation of coal from the mines of the company at Big Grove Creek, opposite Moundsville.

The Secretary of State of West Virginia has granted authority to the following coal companies to increase their capital stock in the amounts named: **Irona Coal Co.**, of Philadelphia, from \$100,000 to \$500,000; **Dawson Coal Co.**, of Philadelphia, from \$200,000 to \$800,000; **Rosemont Coal Co.**, of Philadelphia, from \$350,000 to \$1,000,000; **Richland Mining Co.**, from \$200,000 to \$600,000; **Monongah Fuel Co.**, Monongah, W. Va., from \$50,000 to \$450,000.

The **Row Coal Co.**, of Junior, has filed articles of dissolution with the Secretary of State of West Virginia and has gone out of business.

The **Central Coal Mining Co.**, of Charleston, has acquired 800 acres of coal land along the Ohio, south of Bellaire, and plans to double its present output.

S. A. Moore, of Charleston; J. D. Smith of Hamlin, and others have formed the **Hartford Fuel Co.** at Hartford, with a capital of \$100,000.

The **Red Jacket Consolidated Coal & Coke Co.**, at Red Jacket, under the management of William N. Cummins, is planning to develop 12,000 acres of coal land with a daily output of 3,000 tons. H. T. Wilson of Detroit, Mich., is president of the company.

The **Wheeling Coal Co.** has been incorporated at Wheeling, by Edgar Aaron, A. J. Gilleland and G. A. Blackford.

H. R. Greist, of Ebenburg, Pa., has obtained option on 5,000 acres of coal land in Wood County.

Counsel for the state and for the defense have agreed to Postpone the trial of **C. Frank Keeney**, president of District 17, United Mine Workers, charged with being an accessory to murder. Feb. 19 has been agreed upon as the date when Keeney will be brought to trial.

Attorneys for the defense in the case against **Walter Allen**, convicted of treason, have filed a bill of exception in Judge J. M. Woods' court at Martinsburg for certification to the State Supreme Court. Attorneys for the Rev. **J. E. Wilburn** and his son **John Wilburn**, both of whom were convicted for murder, have announced that similar action will be taken as to their clients. **Walter Allen**, who was found guilty of treason, has forfeited his bond and is now a fugitive from justice.

WYOMING

The **Peerless Mine** of the **M. H. Shields Coal Co.**, at Gillette, recently was opened. It is a new mine on the C. B. & Q. R.R.

The **Poposia No. 1 Mine** of the **Poposia Coal Co.**, at Lander, was reopened on Dec. 1. It was closed on April 1, the engine and boiler being destroyed by fire during the strike. It is on the C. & N. W. R.R.

nection with C. B. & Q., C. M. & St. P. and C. R. I. & P. Ry., from origin stations in the Clairton, Connellsville and Gallitzin districts, as set out in Penna. R.R. tariff AA ICC 1843. The hearing will be held at Room 606, Chamber of Commerce Building, Pittsburgh, Pa.

In a tentative report made by Examiner **Fleming**, of the Interstate Commerce Commission, a new relationship of coal rates is prescribed on the Louisville & Nashville R.R. from mines in western Kentucky to points in the Northwest.

In Service Order No. 35, issued Jan. 15, the Interstate Commerce Commission instructs the Norfolk & Western Ry. to assign eight cars per day for ten consecutive working days, beginning Jan. 17, at any one of the following mines: Baby, West, Boisbien, Caswell Creek, Cherokee, Lick-Branche-Shamokin, Norfolk-Angle, Rolf, Sagamore Nos. 1 and 2, Delta, Pocahontas Nos. 6, 7 and 8, and Pulaski of the Pocahontas Fuel Co.; Elkridge Mine, of the Elkridge Coal & Coke Co.; Roanoke Mine, Roanoke Coal & Coke Co.; Booth-Bowen Mine, Booth-Bowen Coal & Coke Co. The cars are not to be counted against the distributive share of the mines. The coal is for delivery at the United States Navy Yard at Portsmouth, Va.

Obituary

Edward Savage, aged 83, the last survivor of the historic Blue Rock Mine disaster, died at his home in Crooksville, Ohio,

CANADA

According to figures just issued the production of coal for October of 1922 in Alberta was the largest for any one month in the history of the industry in that province. Output up to the end of October last, compared with the same period of the preceding years, was as follows: In 1921 a total of 4,610,301 tons; in 1922 a total of 4,250,824 tons. In the month of October, 1922, a total of 26,752 tons was produced, compared with only 588,291 tons in October of 1921.

The **International Fuel Co., Limited**, has been organized in Toronto and has been granted a charter authorizing it to engage in a wholesale coal business and to acquire coal mines, etc. The authorized capital is \$40,000 and the provisional directors are: **G. M. Malone**, **Albert Mearns** and **G. Wallis**.

A permanent body of government experts to be known as the **Dominion Fuel Board** has been created by an order-in-council at Ottawa. Its members are Charles Camstell, Deputy Minister of Mines; John McLeish, director of the mines branch; B. F. Haanel, chief of the fuel testing division; D. B. Dowling, geologist; J. B. Challies, director of the water-power branch, and F. C. Lynch, superintendent of natural resources intelligence. The board is authorized "to secure all available data and to consult and co-operate with such individual bodies as they may deem specially qualified to advise upon any particular phase of the work."

The federal government will be asked to establish by law for the miners of Alberta a minimum scale of wages and six-hour day with a five-day week, Saturday to be a holiday, following a decision of the Alberta Federation of Labor, at its concluding session held in Medicine Hat, Jan. 12. It is also asked that first-aid stations be established inside the mines.

Imports and exports of coal during the calendar year 1922 are given in a summary just issued by the Dominion Bureau of Statistics. The totals for both are considerably below the average for the preceding three years, as shown in the following figures:

Canadian Coal Exports and Imports (In Net Tons)

	Calendar Year	3 Yr. Average
Anthracite imports..	2,692,731	4,817,536
Bituminous imports..	12,562,888	13,816,457
Coal exports	1,818,582	2,295,183

The **Coderre Cup**, a valuable trophy offered by the St. John Ambulance Association for competition by teams of miners in first-aid, has been won this year by No. 1 team of the International Coal & Coke Co., of Coleman, Onta. The next in order was team No. 1 of the Western Fuel Corporation, Nandimo, B. C. The cup, emblematic of the miners' first-aid championship of Canada, is named after the donor, Judge Coderre, formerly Canadian Minister of Mines.

recently. He was one of a number of men imprisoned for 14 days and 13 hours in the Blue Rock Mine and rescuers tunneled through 400 feet of earth and rock to reach them. The men had lived on the contents of two dinner pails, four quarts of water and some sulphur water which had trickled through the rocks.

Death has claimed **Don Carlos Robbins**, well known Utah geologist and adviser to coal companies of the state. He was 71 years of age and was born in Salt Lake City.

William W. Jackson, coal operator, with holdings at Dunshore, Sullivan County, died of apoplexy Jan. 9 at his home in Williamsport, Pa. He lived alone. Two daughters of Memphis, Tenn., and a sister, survive.

Edward J. Robinson, one of the founders of the **Globe Coal Co.**, of Indianapolis, and prominent in business and political circles for many years, died recently from complications following the accidental discharge of a shotgun, the charge entering a knee. At first it was not thought the wound was more than painful, but acute nephritis caused a rapid decline. The widow and one son survive. Mr. Robinson was a Republican candidate for the nomination for Mayor at the last primary, but was defeated.

D. E. Martin, a member of the **Martin & Hubbell Coal Company**, who had been a resident of Kansas City, Mo., for about 35 years, died at his home in that city. He was sixty years old. A widow survives. Mr. Martin was born in Gallatin, Mo., and was well known throughout the northwest part of Missouri.